East Engin.
Library

FOOD INDUSTRIES

JAN 1 - 1934

THE NEWS OF • PRODUCTION • ENGINEERING • DISTRIBUTION

BAKERY PRODUCTS

BEVERAGES

CANNED AND PRESERVED FOODS

CONFECTIONERY AND CHOCOLATE

DAIRY PRODUCTS AND ICE CREAM

FATS AND OILS

FLOUR AND CEREAL PRODUCTS

MEATS AND MEAT PRODUCTS

OTHER FOODS AND SPECIALTIES

FURTHER ACTION NECESSARY

The food industries should demand that the proposed revisions of the food and drug law separate entirely the food regulations from those affecting other groups of commodities.

S.1944 will be under active consideration in both Senate and House of Representatives. But no House hearings are yet arranged.

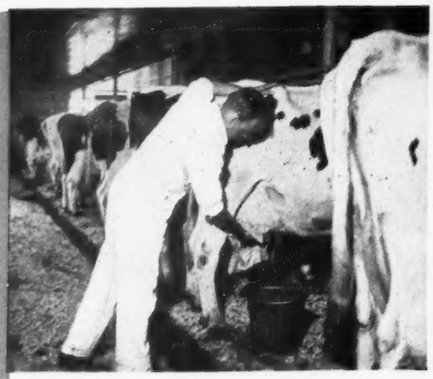
Food manufacturers must register their views and desires with both houses of Congress.

Write your recommendations to Senator Copeland and to your own Congressman and the Senators from your State—and **do this now.**

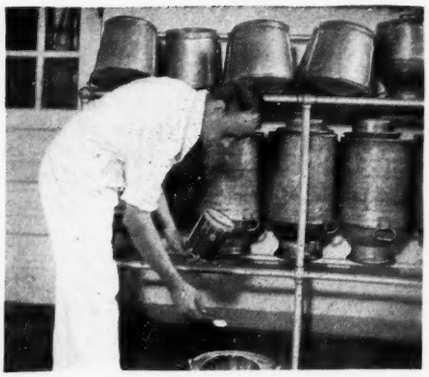
JANUARY 1934

McGRAW-HILL PUBLISHING COMPANY, INC.

PROTECT MILK QUALITY at every step from COW TO CONSUMER



Milk and milk product protection starts even before milking, when the cow's udders and inside flanks and the milker's hands are disinfected with HTH-15 solution.



A teaspoonful of HTH-15 in 3 gallons of water makes an effective germ-killing rinse (sodium hypochlorite) for milk pails and other dairy equipment.

● "You can't wash milk," says a recent dairy advertisement. Careful sanitation in your plant can't restore the quality that milk has lost between the cow and your receiving tank.

In spite of pasteurization, the effect of bacteria introduced by unclean utensils on the farm puts milk just so many hours nearer the point that means spoilage and lost customers. That is why operators who have recognized the value of HTH-15 for plant sanitation are passing the word along to producers. Used on the farm as well as in the plant, HTH-15 makes possible a complete sanitation routine that gives the same high standard of protection at every step from cow to consumer.

Plant operators can recommend HTH-15 to their producers with confidence. They know it always has the same high germ-killing power—that it's so simple and convenient to use that producers can't go wrong—that the corrosion factor of HTH-15 has been lowered to a point that eliminates danger to cans and utensils.

Most important of all, HTH-15 is so economical that producers can afford to use it on *all* their equipment and utensils. A teaspoonful of HTH-15 powder in water makes three gallons of a *sodium* hypochlorite rinse solution at a cost as low as ¼ cent per gallon.

Have your producers start using HTH-15 at once. See how it simplifies high-count problems in the plant. The coupon below brings you copies of a valuable pamphlet on farm sanitation that you can pass on to your producers.

HTH
15
REG. U.S. PAT. OFF.
A preparation of HTH and soda base for use as an efficient germicide, bactericide, disinfectant and deodorant
Active Ingredient—Available Chlorine.....Not Less Than 15%
Inert Ingredients.....Not More Than 85%
Contents 3 lbs. net
Manufactured by
The MATHIESON ALKALI WORKS (Inc.)
250 Park Avenue, New York, N. Y.
U.S.A.
This Package is Sold for Commercial Use Only

The MATHIESON ALKALI WORKS (Inc.)

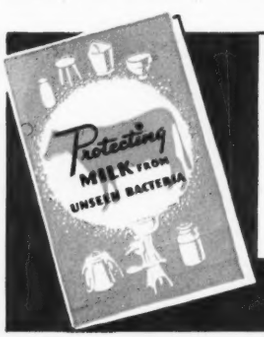
250 Park Avenue, New York, N. Y.

Soda Ash . . . Liquid Chlorine . . . Bicarbonate of Soda . . . HTH and HTH-15 . . . Caustic Soda . . . Bleaching Powder . . . Ammonia, Anhydrous and Aqua . . . PH-Plus (Fused Alkali) . . . Solid Carbon Dioxide

● HTH-15 is a dependable product containing 15% available chlorine, manufactured and guaranteed by The Mathieson Alkali Works (Inc.), one of the oldest and largest producers of chemicals in the world. It comes in sealed 3-lb. cans with a handy key opener, one dozen cans to the case. One 3-lb. can makes 500 gallons of an effective germicidal rinse.

FREE...

Send for this new pamphlet, "Protecting Milk from Unseen Bacteria." We will be glad to send copies for you to give your producers.



The Mathieson Alkali Works *(Inc.)*, 250 Park Avenue, New York, N. Y.

Please send me.....pamphlets on dairy sanitation that I can pass on to my producers.

Name.....

Address.....

SEND THIS COUPON—NOW

THIS MONTH . . .

articles about — on pages

AIR CONDITIONING 47, 33
CONVEYING 4, 15, 33
DISTRIBUTION 17, 18
FILLING 4
FUMIGATION 10, 20
HEAT APPLYING 12, 33
LEGISLATION 23, 26, 29
MAINTENANCE & REPAIR 4, 33
MANAGEMENT 4, 8, 12, 18
MATERIALS HANDLING 4, 10, 12, 15, 20
MATERIAL SELECTING 8, 10, 33
MODERNIZING 4
MOLD CONTROL 47
PEST CONTROL 20, 33
CONSTRUCTION 4, 12, 33
QUICK-FREEZING 17
REFRIGERATION 4, 20, 47
SANITATION 4, 10, 20, 33
STORING 4, 17, 20
TRUCKING 4, 20, 31, 32
WAREHOUSING 18
WASHING 4

Bakery Products 10, 12, 18, 20, 23, 29
Beverages 18, 20, 23, 29
Canned and Preserved Foods 8, 10, 17, 18, 20, 23, 29
Confectionery and Chocolate 15, 18, 20, 23, 29, 47
Dairy Products and Eggs 4, 18, 20, 23, 26, 29, 33, 47
Fats and Oils 18, 20, 23, 26, 29
Flour and Cereal Products 15, 18, 20, 23, 29
Meat and Meat Products 17, 18, 20, 23, 26, 29
Other Food Specialties 15, 18, 20, 23, 29

FOOD INDUSTRIES

NEWS OF PRODUCTION • ENGINEERING • DISTRIBUTION

LAURENCE V. BURTON, *Editor* — M. A. WILLIAMSON, *Publishing Director*

Editorial Staff:
E. S. STATELER, F. K. LAWLER, *New York*

R. S. McBRIDE, *Washington* — PAUL WOOTON, *Washington* — LEONARD CHURCH, *Cleveland* — N. A. BOWERS, *San Francisco* — S. T. HENRY, *Spruce Pine, N. C.*

Contents for January, 1934

VOLUME 6 — NUMBER 1

Reequipping for Triple Capacity at Lower Cost 4
BY E. S. STATELER

What Governs the Price We Pay for Raw Material? 8
BY A. E. HANSEN

Turkish Figs Have Gone Modern 10
BY HARRY GREEN

Small Mechanical Ovens Give Adaptability and Low-Cost Operation 12
BY HARRY CARLTON

Conveying Bulk Materials by the Redler Principle 15
BY NIXON W. ELMER

Intercommodity Competition Is Your Problem Also 17
BY CLARENCE BIRDSEYE

When Does Warehousing Pay? 18
BY S. A. WEART

Careless Transfer of Raw Materials Paves Way to Further Losses 20
BY HARRY STINER

Over the Bumps with the Tugwell Bill 23

Definitions and Standards for Meats and Dairy Products 26

Violent Upheaval in A.A.A 29

Saving Gasoline by Automatically Shutting Off Truck Engine 31

Tuning Engines by Vacuum Gage 32

Brockway Motorcade Begins at New York 32

Solid CO_2 as a Refrigerant for Ocean Shipments 47

Editorials 1
Ideas of Practical Men 33
New Products 34
News 36
Men, Jobs and Companies 40
Business Trends 42
New Equipment 44
Manufacturers' Catalogs 45
What's on Your Mind? 46

Copyright, 1934, by McGraw-Hill Publishing Co., Inc.

Contents indexed monthly in the Industrial Arts Index

FOOD INDUSTRIES. Published monthly; price 25c. a copy. Subscription rates: United States, Mexico and Central and South American countries, $2 a year. Canada, including duty, $2.50 a year. All other countries, $3 a year or 12 shillings. Entered as second-class matter April 30, 1929, at Post Office at New York, N. Y., under the act of March 3, 1879. Printed in U. S. A. Cable address: "McGrawhill, New York." Member of A.B.P. Member of A.B.C.

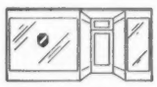
McGraw-Hill Publishing Company, Inc., 330 W. 42d St., New York, N. Y.

Branch Offices: 520 North Michigan Ave., Chicago; 883 Mission St., San Francisco; Aldwych House, Aldwych, London, W. C. 2; Washington; Philadelphia; Cleveland; Detroit; St. Louis; Boston; Greenville, S. C. James H. McGraw, Chairman of the Board; Malcolm Muir, President; James H. McGraw, Jr., Vice-President and Treasurer; Mason Britton, Vice-President; Edgar Kobak, Vice-President; H. C. Parmelee, Vice-President; Harold W. McGraw, Vice-President; B. R. Putnam, Secretary.

NRA MEMBER U.S. WE DO OUR PART

A **LOT** *of* ADVERTISING *for a* LITTLE *money*

Meyercord All Purpose Signs – even more permanent than the best hand painting – are applied on your dealers' windows...



...on your dealers' doors...

on your salesmen's cars

...on your delivery equipment

...on show cases

...on panels of cardboard, metal or wood

...in fact on any smooth surface.

When you consider the low price at which these Quality Signs are purchased... and that the life of the sign is measured in terms of *years, not months,* you'll agree that you're getting A Lot of Advertising for Little Money! That's why hundreds of firms are using them today.

THE MEYERCORD CO.

208 W. Washington St., CHICAGO

DECALCOMANIA TRANSFERS
For Windows, for Tops-of-Windows, for Trucks, for Name-plating, for Decoration

LET OUR ART DEPARTMENT CREATE A SIGN FOR YOU. INQUIRE NOW.

FOOD INDUSTRIES

Volume 6 Established 1928—McGraw-Hill Publishing Company, Inc. Number 1

THE NEWS OF PRODUCTION • ENGINEERING • DISTRIBUTION

NEW YORK, JANUARY, 1934

•

Laurence V. Burton, Editor

Hold to the Profit Motive

CERTAIN government officials admit their desire to eliminate the profit motive from industry, as if it were something dishonorable or unmoral. They take this attitude in the face of the fact that the one changeless aspect of life is human nature with its constant desire for gain.

• In this group of those who desire to make life conform to their own private rules (for others), the leader appears to be Rexford G. Tugwell, Assistant Secretary of Agriculture, and, it is regrettable to note, the President himself appears to give indulgent assent to the Tugwell theories. Unfortunately, the clan which seeks to eliminate the profit motive—a most dangerous objective—are not all known. Nevertheless, we are beginning to learn the major Washington sources of this vicious infection.

• Society must be built with a recognition of the major characteristics of human nature. Ignoring even one of its fundamental characteristics has the effect of destroying the stability of society until we can attain that Utopian future where the ignored characteristic shall have been eliminated. Fanatics of any sort, therefore, are dangerous. Yet we are today faced with this group of anti-profit fanatics who ignore the fact that human nature is still essentially selfish.

• Despite the tremendous progress from the time when bludgeoning one's neighbor was accepted social intercourse, little if any progress has been made in the elimination of man's desire to acquire more than he now possesses. All that has been done is simply to circumscribe the method by which society permits a man to go about acquiring. Nothing yet has ever limited the *desire* to acquire.

• Unhappily, the food industries are particularly vulnerable to the attack of the Tugwell theorists. Many of the industries still find themselves under the domination of the Department of Agriculture, where there exists one of the major groups attempting to impose its theory of no profits. Only a few of our industries have escaped this domination by retransfer of codes from A.A.A. to N.R.A. Hence this academic social question takes on a tremendous practical significance.

• It is going to be necessary, we fear, for some of our industries to become outspoken opponents of this part of the administration effort. We regret this responsibility. It will be embarrassing for any group, no matter how well justified, to put themselves in such a position that they may be charged with opposition to the recovery program of the President. But as long as the President allows fanatics to run part of his program, then at least that part must be opposed.

• FOOD INDUSTRIES regrets that no adequate way exists in which all producers and marketers of essential foods can work together in this matter. We are confident, however, that whatever group or company finds it necessary to take up the cudgels in defense of a proper profit system will quickly find itself supported by all of the strength which the rest of our industries can afford to it. Such an exponent of the common cause will deserve unanimous support. And it will not deserve—though doubtless it may receive—criticism as an allegedly selfish agency working against the public interest.

• The fact is that the public interest can be served only by maintaining a proper profit system, because only by a profit can industry continue in business and continue to give employment as well as service to society.

AS IT LOOKS TO US

Looking at 1934 . . .

Forecasting the trends of business for the year ahead is more difficult today than ever before. The successful man of the past who could always see at least a year ahead finds himself at a loss to evaluate and integrate the natural trends with the man-made trends. Artificial conditions arising from the "New Deal" recovery program, particularly the threat of some radical monetary policy and suddenly applied processing taxes, particularly compensatory processing taxes, are almost impossible to estimate in advance with any reasonable certainty.

Nevertheless, there are a few things that we can foresee that can be the basis of some sort of reckoning:

1. It looks like a fairly severe winter with a normal weather stimulus for the purchase of winter goods and heavy foods.

2. Twice as much butter is in storage now as there was a year ago and the price is slipping off badly in late December.

3. The cycle of cow population has at last almost reached its peak, and the forecast for increase in numbers in 1934 is less than 1 per cent above 1933. This compares with a 3 per cent increase a year ago.

4. Processing taxes on pork will reduce the price of hogs to the farmer by the amount of the tax and probably will force a compensatory tax on other protein foods by virtue of political pressure.

5. The pig-buying program will result in smaller slaughter of hogs in the first half of 1934 and larger slaughter in the last half. As a result competing foods probably will fare slightly better and poorer, respectively.

Our own guess, if it interests you, is that the *Business Week* index probably will improve slowly and irregularly by about 8 per cent during the course of 1934. Owing to vast uncertainties of a political nature, our guess is only a guess; it should not be called an estimate. The rise of 8 per cent from December, 1932, to December, 1933, appears to be possible of duplication in 1934. At any rate, we hope so, for your sake as well as our own, and extend to all our readers the season's greetings and a hope that we have not been bad guessers.

Food Law—Flash . . .

Don't place very much importance on the present version of the Tugwell bill, for when a revision is presented by the Copeland subcommittee it will be markedly different from the original version of S. 1944 at the time of its second reading. Even its original authors admit that much.

From the best available official information the first revision will be exposed to public gaze in the middle of January, 1934. This, however, does not eliminate the necessity of constant vigilance to insure a workable, sensible bill.

Tugwellomania . . .

In our best crusading manner, we coined a name for a new disease, Tugwellomania, but Professor David F. Cavers, of Duke University, co-author of the "Tugwell" bill, informs us that we are not rising to the editorial possibilities of such a thought. Indeed, his comments on Tugwellomania constitute one of the most delicious bits of social diagnosis that have ever come our way. His letter on this subject is quoted verbatim.

"While all regulatory legislation arouses exaggerated predictions of disaster from the regulated-to-be, the opposition to S.1944 is perfervid. You are all suffering from Tugwellomania.

"That disease, as I understand it, is a nervous disorder which affects business men at the sight of a proposal by the Assistant Secretary of Agriculture. It is akin to Moleyitis (obs.) and to Berlesia. As an occupational disease among railroad presidents, it is known as Eastmania.

"It is characterized by the following symptoms: Cold feet, red spots before the eyes, a loss of the sense of proportion, and delusions of persecution. During an attack the patient will try to wreck all progressive legislation with which he comes in contact. He should be kept away from lawyers and given no sympathy. When he gets used to the proposal he will recover completely, provided he is fundamentally honest and public-spirited."

Low-Cost Production Vital in 1934 . . .

High-cost methods are obsolete. They must be discarded at once or the period of rising costs which is ahead of us will make heavy drains on cash reserves and bank credits. Management should not wait until the poor-house beckons before doing the one thing that is possible for self-preservation today.

The forward-looking and alert can see in the following example the sound business judgment the other fellow used when he modernized his sugar-grinding department. Nothing was seriously wrong with the old grinders. They were big enough, fast enough, and did a good job, but somebody showed a new mill that would do the same job much more cheaply. Former high-cost equipment required 3.5 hp. per 100 lb., whereas the new mills produce sugar at a power cost of only 1 hp. per 100 lb. It was a good investment.

One modernizes for profit—not to be a good fellow.

Public Policy . . .

Public relations policies of all concerns take on a new aspect during these days of social revolution. Those concerns which have been particularly enlightened in their previous public policies are beginning to reap a harvest either of positive good or freedom from hostile criticism.

A good policy toward the public is something that must begin from the top down. It is far more than having a good public relations counsel. Counselors may be hired, but the relationship is a function of the organization, not of a man. It is manifest in many ways—prices, wages, attitude toward visitors, sales policies, advertising, employee relationships, personal contact.

'Down, Fido! . . .

Interested observers have noted with great interest that the opening remarks at the hearing on the "Tugwell" bill were made by Secretary Wallace—not by Assistant Secretary Tugwell, whose name has so long been associated with the measure. Professor Tugwell was present only while Secretary Wallace was speaking. It is said by those in the know that Professor Tugwell, abhorring the very thought that S.1944 should be called *his* child, abhorring it with that earnestness which one assumes toward the frantic attention of an enraptured but unattractive dog, is bending every effort to divorce his name from the measure.

These same observers wonder, however, if Professor Tugwell has not achieved another victory of no mean sort, comparable to his triumph over George Peek, late of the A.A.A., in persuading Secretary Wallace to sponsor the bill before the committee as a department—not a Tugwell—measure. At any rate, the hearing committee was not left in any doubt that the department and not the Assistant Secretary of Agriculture wanted the act of 1906 completely revised.

It must be admitted that Professor Tugwell is an adept student of the fine political art of maneuvering himself into the detached position of an interested spectator.

Hot Tip on Copper . . .

All too often, many a condition arising in manufactured foods is accepted as inevitable or a "natural" condition of the raw material. There is, however, a cause for everything, even though it may be aggravatingly obscure. Sometimes it requires a very shrewd chemist to locate the causes of the troubles which may not be sufficiently vexatious to compel management to order an aggressive investigation.

Minute traces of copper in quantities ranging from 1 up to 6 parts per million have been found to account for some of these troubles of the food manufacturer. It is advisable to caution that one should not get fooled on this suggestion because in some products, it is reported by our readers, there appear to be critical values, specific for each product, below which the presence of copper has no observable effect.

Thanks to the availability of the new corrosion-resistant alloys, one of the troubles in dairy plants which are manifested by tallowy flavor in cream is now seldom met. This flavor is due to the catalytic effect of traces of copper picked up from the equipment. However, changes in color of pickles, pork and beans, the rapid rancidifying of mayonnaise, and certain harsh flavor problems in prepared mustards and other sour condiments have recently been tied up with minute copper contaminations.

In trouble shooting in this field, the first step is to analyze quantitatively for the presence of copper, and then, if it is found to be present, to manufacture a small quantity of the same products from raw materials which are known to be copper-free under conditions where copper cannot possibly gain access. The product is then held for observation and comparison. If there is evidence that copper may be to blame, then production management should be sure that all raw materials are free from copper and that no copper or copper-bearing alloys come in contact with the food which is affected.

Silver . . .

Great excitement over the silver purchase plan in late December, at the time of writing these words, seems hardly justified. Qualitatively it appears to be a move in the direction of higher prices through monetary juggling. Quantitatively it probably is useless.

Politically, however, the move will have an importance that will far outrun its economic importance.

Retain Industrial Self-Control . . .

Executives must study the signs of the times with exceeding care and be certain that they do not unwittingly go over into the camp of another social faith through a careless act of omission or commission. If you believe in a continuation of the policy of self-government of industry, it is highly important that your industrial code be properly drawn, or else the code will put the federal government in control of certain very important matters.

For example, a set-up for a code authority must provide for a subcommittee on labor problems, organized and constituted so that it is satisfactory to N.R.A. and the Department of Labor. If this is not done, then labor complaints will not be settled by the code authority but will be referred to the director of compliance, a governmental—not an industrial—body. It is no secret that Secretary of Labor Perkins prefers to have labor complaints handled by regional compliance boards rather than by the code authorities.

Our Policy in 1934 . . .

In the coming year you may expect to see FOOD INDUSTRIES actively working for a fulfilment of the following objectives. They represent what we believe to be the greatest good for the food industries.

1. A rational and sane and common-sense modification of the present food law with proper regard to the rights of both the consumer *and the manufacturer.*

2. In this day of rising costs, costs which are rising without any apparent relationship to demand or selling prices, we shall endeavor to show how this problem is being met and how costs may be kept down.

3. We are firmly committed to the sensible profit motive as the soundest basis for a continuation of individual initiative and the shortest way out of the depression. Competition takes care of profits that are too large, and no sensible manufacturer holds the umbrella very high.

4. While we believe in the necessity for adjustment of agricultural production to demand as the basis for permanent economic recovery, we are of the opinion that the processing tax is the wrong way to finance the operation and is the surest way to prolong those uncertainties that defeat recovery.

5. The place of the food engineer in production should be more widely recognized and management should begin to take on a few likely, well-trained youngsters as help is needed, with the idea of building a stronger, more adaptable organization in the years to come.

6. The best and most accurate information and news to aid production staffs and corporation executives in the conduct of their jobs and the formulation of future manufacturing and distribution policies will be available through these pages.

REEQUIPPING

...FOR *Triple Capacity*

...AT *Lower Cost*

By E. S. STATELER

Assistant Editor
Food Industries

WHEN New York City banned the sale of bulk milk, the Dairymen's League Cooperative Association, Inc., was faced with the problem of increasing its bottling capacity nearly threefold to get the same distribution in the city. The output of fifteen receiving stations delivering to New York City had to be bottled, whereas that of only five had been bottled previously.

This objective could be gained by one of three courses of action; that of bottling at receiving stations was not considered, because of the transportation expense. Ten gallons of milk in quart bottles weighs approximately 231 lb., including containers, whereas loose milk weighs approximately 8.5 lb. per gallon, exclusive of container. In addition, the empty bottles would have to be returned to the station.

The company could abandon the existing plant at 19th St. and Ave. B, sell the property, and build a new plant of desired capacity with railroad facilities. An alternative was to rehabilitate the existing plant to supply bottled milk at the same volume as it had been supplying both bulk and bottle milk, and to build a new plant of equal capacity on a site suitable for low-cost distribution. The third way open was to purchase a 90x120-ft. plot facing on 18th St. and Ave. B, back of the existing plant, for truck operation purposes and to reequip the plant in such a way as to get the desired production capacity.

The answer to these three proposals lay in the relative cost of transporting raw milk by rail or by truck and of rehabilitating the existing plant or building a new one.

Owing to the local labor and real estate conditions a greater investment would be represented in either of the first two projects than in the third. Consequently, the decision really came to be made on the basis of whether the raw milk should be transported by tank car or by tank truck. In any event, the 40-qt.-can method had to be abandoned as too expensive except when shipments came from points where it would not be advisable to ship by either tank car or truck.

If the milk came by tank car, tank trucks would still be necessary unless the plant were located with a railroad siding. In addition to the high investment cost, there were other arguments against building a new plant with railroad facilities. Such a site cannot always be suitably chosen for distribution purposes nor can railroad transportation be as flexible in operation as truck hauling.

The combination of these factors plus the conviction that railroad rates for hauling could not be lower than trucking cost resulted in a decision in favor of truck transportation and of rehabilitating the existing plant.

Good Engineering Required

And at this point began the problems of the engineering department of the association. The necessary extensive changes had to be planned to conform to the size and form of the existing plant and the changes had to be made without interfering with the nightly operations of the plant. In the December issue of FOOD INDUSTRIES, pp. 492-494, were discussed the changes that made possible the processing of approximately 6,000 gal. of milk per hour in the plant that formerly handled only 2,000 gal per hour.

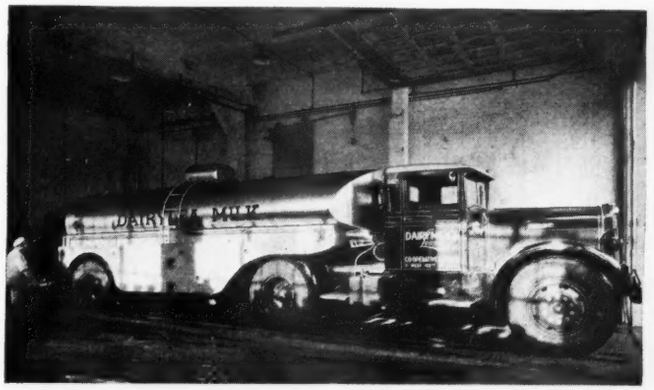
Those projects were a solution to only a part of the problem. Provision had to be made to receive and store for pasteurization the output of fifteen upstate receiving stations instead of five; also the plant had to be organized and equipped to receive into, handle through, and deliver out the necessary number of cases and bottles to hold this milk; further, the cold-room storage requirements had to be reduced to a minimum because of limited plant floor space; and finally the facilities for keeping the plant sanitary had to be maintained, or, where possible, improved.

Through necessity, the receiving stations must be located at points to which the dairy farmers can deliver their milk in cans before 9 a.m. Here the raw milk is tested, cooled to 36 deg. F., and temporarily held for shipment to the plant. Milk from receiving stations that are from 104 to a little more than 200 miles distant may be shipped by tank trucks, whereas milk from points as distant as 400 miles can best be shipped in tank cars to the railroad terminal, whence it is delivered to the plant by trucks. Under the system of transportation that was decided upon, six 6,000-gal. glass-lined tank cars and 40 tank trucks, capacity from 1,600 to 3,000 gal., are used.

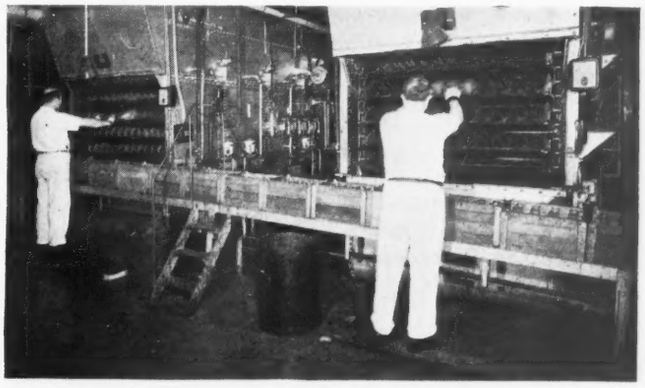
Because each day's supply of milk arrives at the plant within an interval of about 6 hours (4-10 p.m.), provision had to be made to get accurate gross and net weight of the trucks and to empty them quickly. This was accomplished by building an inclosed scale room into the Ave. B end of a 50-ft. addition across the 120-ft. width of the plant at the rear. This room is equipped with three sets of Buffalo platform scales which are 34 ft. long, have a weighing capacity of 60,000 lb. each, and are pitched toward the scale beams near which are Davidson centrifugal pumps for

New systems for transporting raw milk and for handling cases and bottles make possible such increase in plant production capacity

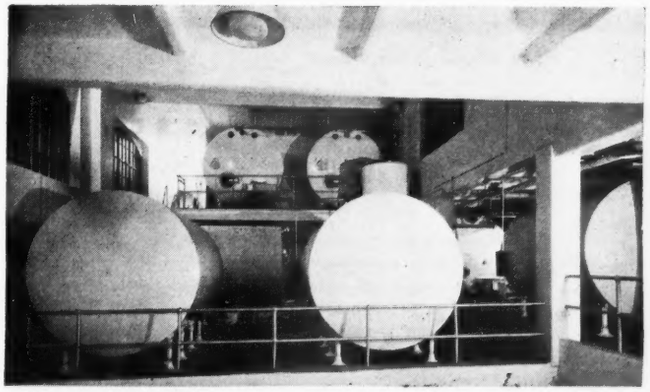
emptying the tanks. Such an arrangement assures that three tanks can be in an unloading position at the same time, that they will drain by gravity, and that everything, except the milk, that enters into the gross weight will be included in the net weight of the trucks. The scale pits are so constructed that workmen can work under them and they may be cleaned daily. Brick walls cut this room off from the rest of the plant and overhead sliding doors shut it off from the street. Through an opening connecting the scale room with the original plant, the relatively small quantity of milk shipped in 40-qt. cans is received onto a roller conveyor to be dumped and weighed. Milk from the tank trucks and from the weigh hopper, into which the 40-qt. cans are dumped, is pumped through sanitary piping direct to the 42,000-gal. capacity storage tanks on the third floor. If the weather is hot and the milk temperature likely to be above 38 deg. F., the milk is pumped



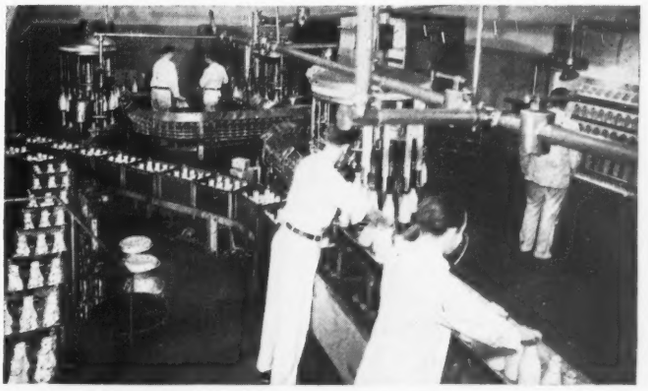
Making scales do double duty. Slope toward the beam gives gravity drain to tanks. New 3,000-gal. tank truck fills a platform scale 37 ft. long.



Five washers, 12 bottles wide, clean and sterilize 120 bottles each per minute. One operator loads washer as cases pass along power conveyor.

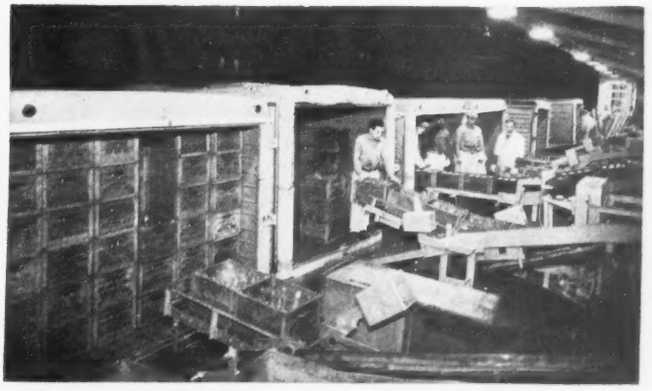


Eleven glass-lined storage tanks supply 42,000 gal. raw milk by gravity feed to four sets of Inconel heat exchangers on floor below.



Specially designed conveyors take cleaned bottles to fillers. Filled bottles are loaded into the washed cases by each man at the rate of 120 per minute.

Power-driven conveyors bring cases of empty bottles from unloading platform at a speed that co-ordinates with the washing and filling operations.



An 11-station platform permits trailers to discharge and receive loads without shifting position. The insulated trailers serve as storage rooms when loaded.

through an internal tube cooler to the tanks, where it is held at 38 deg. F. awaiting pasteurization.

In addition to showing an appreciable saving in transportation and handling expense, this method of getting the milk from the receiving station into the plant storage tank makes possible a closer check on the quantity of milk received and has plugged hidden leaks through which milk was lost when shipped wholly in 40-qt. cans.

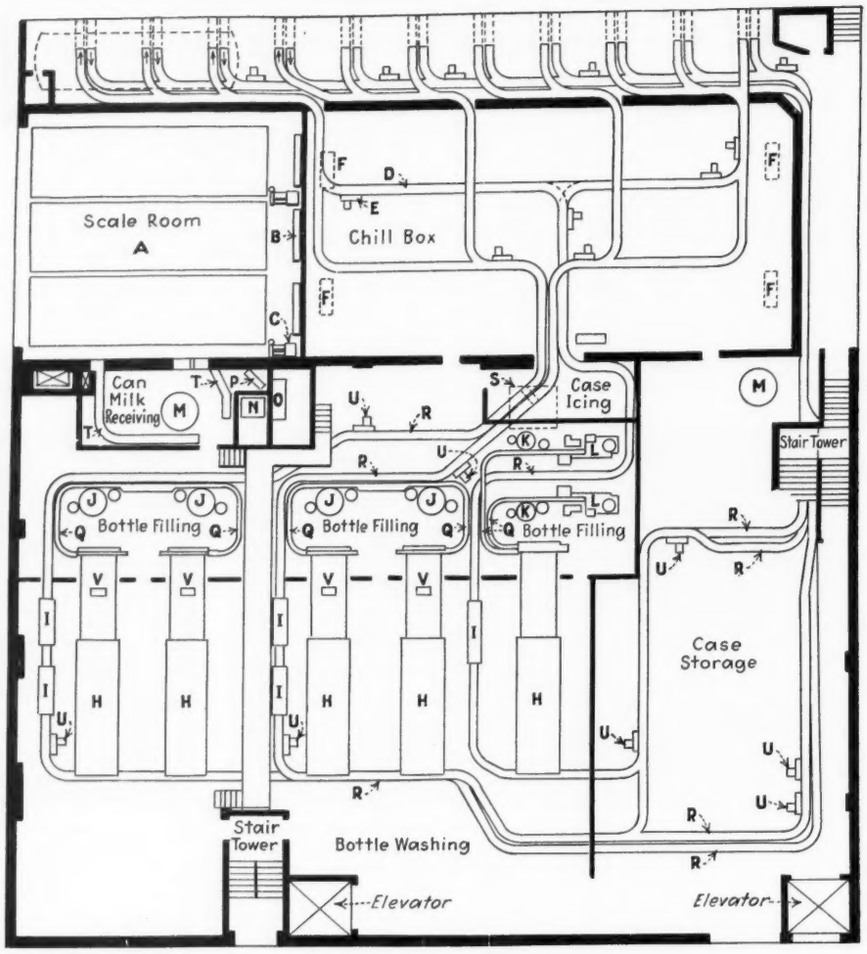
One of the most important reasons why milk can now be handled through this plant so economically at the rate of 6,000 gal. per hour is the conveyor handling system by which the cases of empty bottles are brought back into the plant, cleaned, filled and sent out to be loaded into trucks and trailers ready for distribution to the customers.

11-Station Platform Added

When the 50-ft. addition was made across the rear of the plant, a chill room, having the same width as the scale room, was added to take the place of a cold-storage room which had been made a part of the bottling room. Beyond the walls of the scale and chill rooms and across the full width of the plant was built an 11-station unloading and loading platform. These stations were located and equipped so that both trucks and trailers can unload onto and be reloaded from power conveyors without shifting position.

As the cases of empty bottles are transferred by hand from the trucks or trailers to the Mojonnier power conveyors, they move through the case storage room where those containing pint size bottles are automatically separated from those containing quart bottles. During the hours the washers and fillers are in operation, the cases proceed in a continuous manner on the conveyors along the front of five Yundt air-brush bottle washers, each of which is twelve bottles wide and is loaded by one man at the rate of 120 bottles per minute. The empty cases stay on the conveyor to pass through a case washer and be delivered alongside the loading tables in front of the bottle-filling machines.

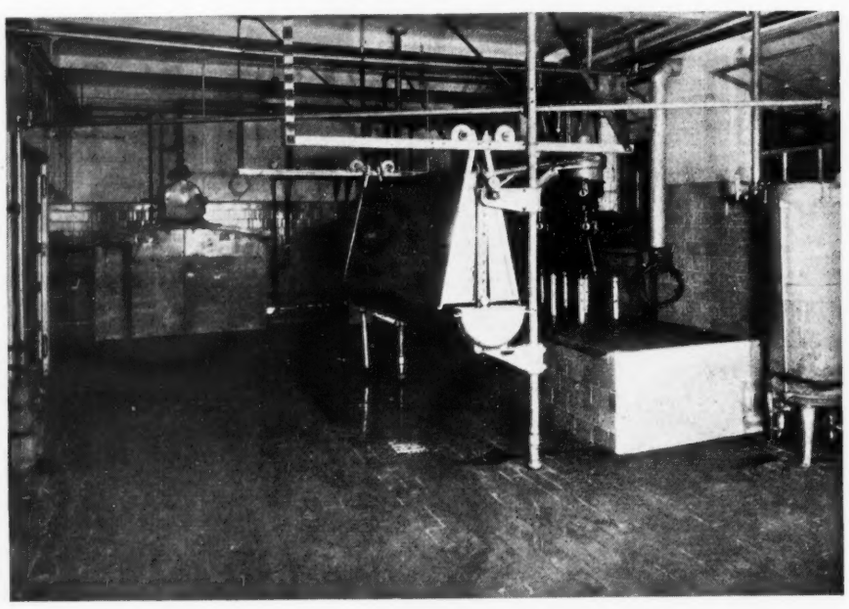
In the meantime, the bottles have gone through the washers, where they have been soaked, washed, rinsed and sterilized at the rate of 120 per minute. Upon discharge from the washers, they are inspected before passing to the 120-bottle-per-

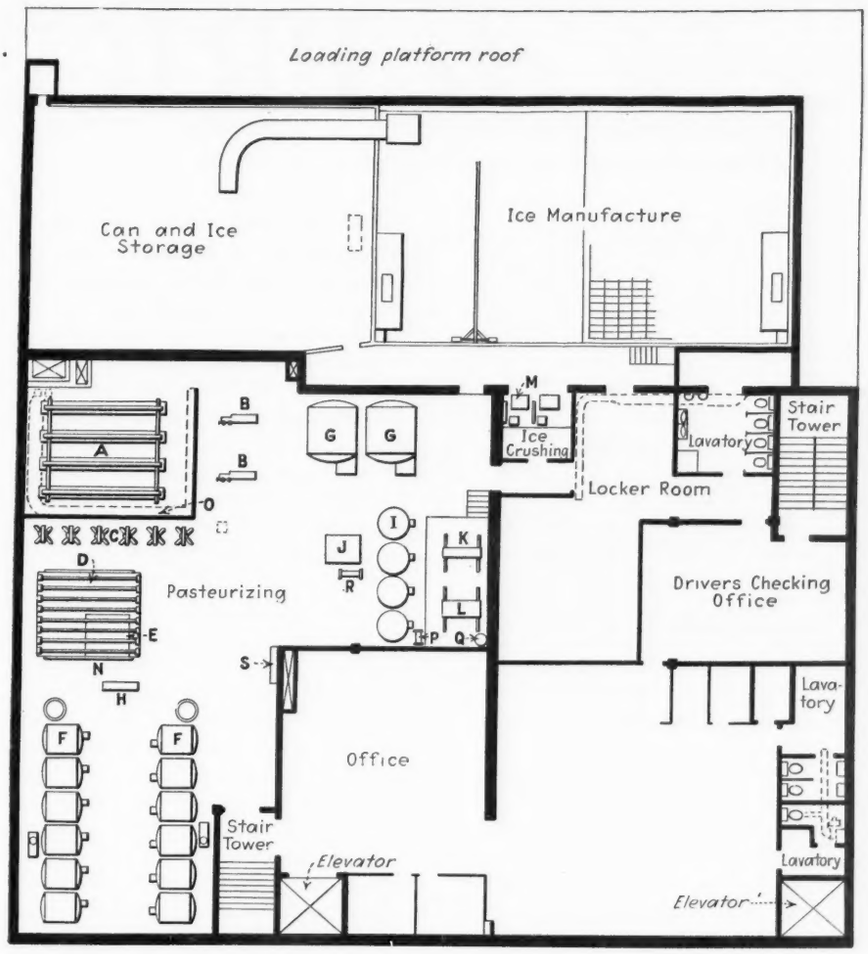


First Floor Equipment

A. Platform scales	3	L. Bottle cappers	2
B. Platform scale beams	3	M. Can washers	2
C. Milk pumps	2	N. Can weigher	1
D. Power case conveyor	—	O. Receiving vat	1
E. Power units	11	P. Can weigh scale	1
F. Diffuser cooling units	4	Q. Power bottle conveyor	—
G. Draw-off tank	1	R. Power case conveyor	—
H. Bottle washers	5	S. Ice hopper	1
I. Case washers	5	T. Gravity can conveyor	—
J. Bottle fillers (120 per min.)	4	U. Power units	8
K. Bottle fillers (60 per min.)	2	V. Blower	6

Waterproofed floors graded to a center drain, tiled and painted walls, and protected rust-susceptible equipment in buttermilk department are typical of all processing rooms.



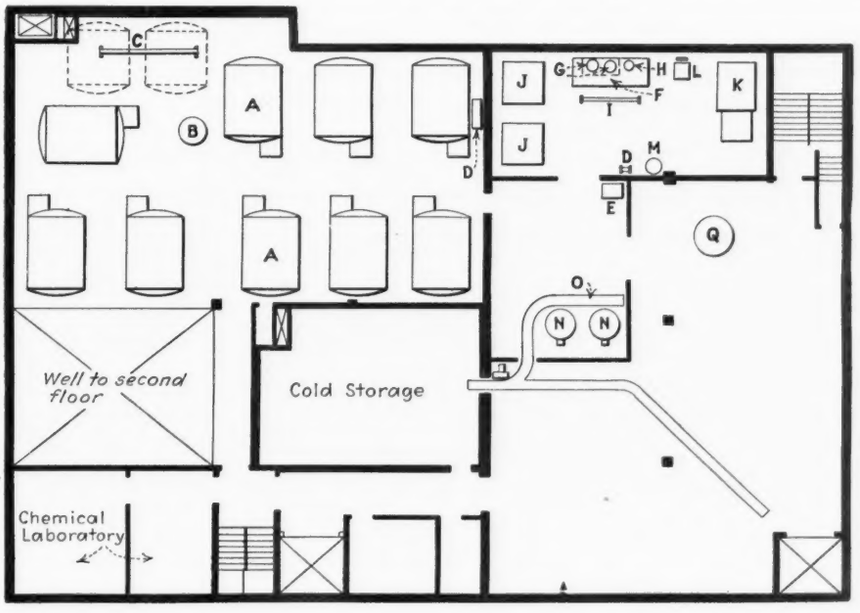


Second Floor Equipment

A.	Surface regenerative coolers	4
B.	Milk pumps with speed control	2
C.	Milk filters	6
D.	Internal tube coolers	4
E.	Internal tube heaters	4
F.	Pasteurizer holders	12
G.	Pasteurized milk balance tanks	2
H.	Control instrument panel	1
I.	Low vats for cream	4
J.	Cream balance vat	1
K.	Cabinet cooler for cream	1
L.	Cabinet heater for cream	1
M.	Ice crushers	2
N.	Heater unit	1
O.	Ventilation air units	3

Third Floor Equipment

A.	Raw milk storage tanks	11
B.	Raw milk balance tank	1
C.	Internal tube cooler	1
D.	Milk pumps	1
E.	Dump vat	1
F.	Separator vat	1
G.	Separators	2
H.	Heater	1
I.	Surface cooler	1
J.	Buttermilk vats	2
K.	Churn	1
L.	Scales	1
M.	Starter can	1
N.	Low vats for cream	2
O.	Power conveyor	—



minute vacuum filling and capping machines, from which they are loaded by one man into the clean cases at the loading table. Without leaving the conveyor, the filled cases pass through a compartment to receive a charge of crushed ice on their way to the chill room, previously mentioned as a part of the 50-ft. addition to the original plant building. From the chill room the loaded and iced cases proceed to the platform to be loaded into trucks or trailers.

The layout of the conveyor system is such that from any one of these eleven unloading and loading stations it is possible to have cases of empty bottles delivered to the system, pass through the plant for cleaning and filling and delivered at will back to that same station or to any one of the other ten stations without the cases having been removed from the conveyor during the entire circuit. The effectiveness of the system is such that a 420-case trailer can be loaded at any station in about 18 minutes.

Insulated Trailers Used

In the main, trailers insulated with 2 in. of cork and having a capacity of from 420 to 580 cases are used for distributing the bottled milk to the retail outlets, because in principle they are cold-storage rooms on wheels. In them the bottled milk is stored during the night while awaiting delivery to customers and is kept ice cold until delivered. By using trailers for storage purposes the plant can handle about three times the volume of milk with approximately the same cold-storage space that was formerly required. Also less ice is needed than when non-insulated trucks were used for delivery purposes. This saving is such that no longer is it necessary for ice to be purchased regularly at commercial prices. Except on special occasions, the 60-ton field, which is on the second floor of the chill room addition to the plant, produces enough ice to meet the demand.

With all these changes there has been the necessity of maintaining the highest degree of sanitation. Many of the operations in connection with the processing of milk are wet ones and much water and steam are used for cleaning and sterilizing purposes. Unless special precautions are taken to protect the floor, walls, and equipment, maintenance and repair ex-

(Turn to page 30)

What Governs the PRICE

A Canner's View

By A. E. HANSEN
General Superintendent
Libby, McNeill & Libby
Chicago, Ill.

When raw materials are purchased or contracted for today, for sale a year later, what is the right price to pay? Even more perplexing is the determination of the right price to pay when a crop must be raised "to order" or there is no crop. Mr. Hansen, well known to readers of FOOD INDUSTRIES, finds important reason for green produce prices which are higher than the general index of field crop prices.—EDITORS.

IN GENERAL the price the canner has paid for green produce has not declined in line with the decline in prices on agricultural products as a whole. Fig. 1 shows the trend of prices for four of the principal green crops used for canning, and Fig. 2 shows the trend of prices of four other main farm crops. The decrease in prices for the green crops from 1929 to 1932 is about 32 per cent, while during the same period the decline in prices for the other four main farm crops was from 60 to 67 per cent. The curves also show the trend of prices for the first six months of 1933, which are the latest data available, and it may be noted that while there was a sharp trend upward in prices for the four main farm crops, there was not much change in the prices for green crops. This is due entirely to the fact that the green crops were contracted for early in the year, before there was any improvement in general farm prices.

However, as indicated by these curves, it is quite noticeable that there seems to be a greater stabilization of prices paid for green crops than there is of prices paid for other farm crops; and in my opinion there is a very definite and outstanding reason for it. As I have indicated, there are two types of farm crops:

1. Those crops grown for a special or a local market.

2. Those crops grown for a general or world-wide market.

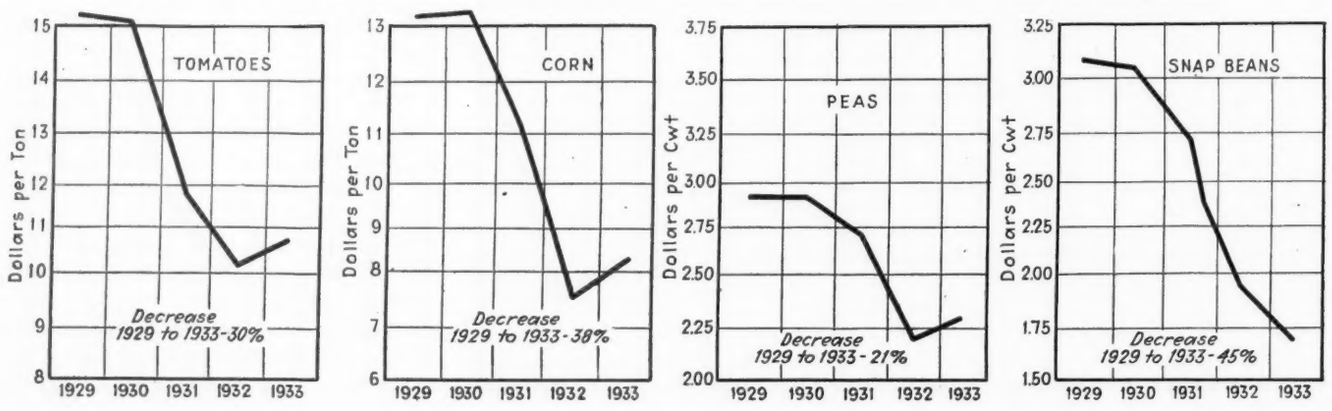
In the former come such crops as the canner uses in all his vegetable plants, whereas in the latter come such crops or products as: grains of all kinds; cotton; wool; potatoes; meats (cattle, hogs, sheep); milk (dairy products); and, to some extent, semi-perishable fruits from well-established orchards.

In the first type, there is no general established or sure market, and the crops are not and will not be grown except on a firm contract. In the latter type, there always is an established general market—good or bad, according to the law of supply and demand—but when the farmer makes his plans to grow such crops several months in advance of the actual marketing of them, he is always hopeful that a good market will prevail at the time he has the crop ready for market. However, he can always be sure that there will be some kind of market for his produce.

On the other hand, the grower of a special crop, such as I have described, must not only know in advance that he has a market for such a crop, if it is not to be an entire loss, but he must also know in advance what he is going to get for his crop or he will be at the mercy of a single buyer, because there is no other prospective purchaser of his crop.

To expect a farmer to grow highly perishable crops that cannot be shipped to the general market except on some kind of a contract basis is, therefore, unreasonable; and it is also just as unreasonable to expect that he will grow such special-purpose crops, even on a contract basis, if the basis will not *in his opinion* bring at least as much as he estimates

Fig. 1—Composite price movement of four principal green crops for canning: tomatoes, corn, peas and string beans.



We Pay for RAW MATERIAL?

the other type of crop will bring in the general or world market. This is true especially when the general type of crop is attended with less risk of crop damage or failure, or where the investment in crop is much less.

Let me illustrate. I go to a farmer and ask him to grow ten acres of peas for canning instead of the ten acres of oats that he would otherwise grow. To begin with, peas require a better prepared seed bed than do oats—an increase in expense. In the second place, the investment in seed for ten acres of peas is today approximately $180, whereas the investment in seed for the same acreage of oats is approximately $4. In the third place, the attending risk of damage or of a complete crop failure is many times greater with peas than it is with oats. In the fourth place, peas must be harvested, hauled to a viner, and vined (threshed) during a period of very narrow limits; and this must be done regardless of weather conditions or of other existing circumstances, which is not the case with oats, which can be harvested and shocked on any one of several days and can be threshed out at any later convenient date. Furthermore, inasmuch as there is a year-around market for crops like oats, they can be marketed immediately or held in anticipation of a better market.

The point I wish to make is that unless the proposition I make this farmer to grow ten acres of peas looks pretty good to him, he is quite likely to turn me down and grow oats instead of peas. Consequently, I will have no peas, because they are not grown as generally as oats are.

Farming is not often a food processor's business, but there are many times when the manufacturer must contract with the farmer for a special crop if he wants the raw material.

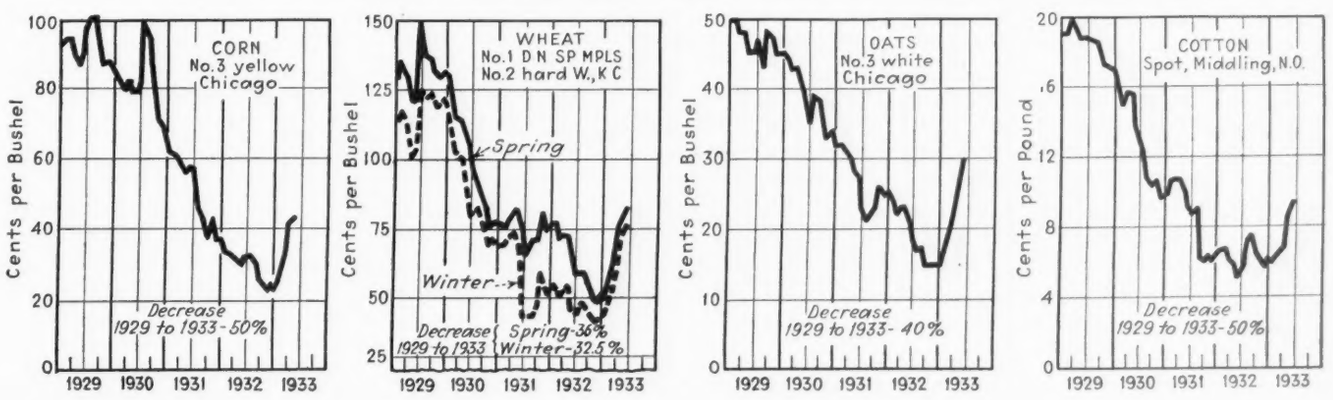
In contrast to this picture let us look at one where I am a buyer of milk. The farmer will produce milk because he knows that there are markets for his product other than the one I furnish him, and so he does not require me to enter into a contract with him. If I pay him from month to month a price for his milk that is about in line with the other markets for his product, I probably shall continue to get his milk. On the other hand, if at any time I do not pay him what he may consider to be a fair price, he is not at my mercy, because there are other markets available for his produce, and he is not forced to accept mine or none at all.

It is true, of course, that the farmer who produces a crop of oats or a "crop" of milk has no guarantee as to the price he will receive, but he does have a guarantee, based on years and years of experience, that there *will be a market* for his product.

It is quite evident from the foregoing that by far the most satisfactory situation for both the grower and buyer of a crop is in the field crops that have a general or world market, because, generally speaking, such markets reflect a comparatively true and real value of the product *at the time it is marketed*. The fact that the market value of special crops,

(Turn to page 48)

Fig. 2—Price movements of important agricultural products: corn, wheat, oats and cotton.



Unless systematic care of the trees is practiced, new growths start from the roots and wind up among the mother tree's branches until there is no way to tell the age of a fig tree.

Turkish FIGS *Have Gone Modern*

By HARRY GREEN
New York, N. Y.

MOST EVERYONE understands that the Turk has stopped wearing a red fez and loose trousers, and has changed his alphabet to something readable. They have also heard about Turkish rugs and cigarettes, but how many are aware that Turkey produces annually about 25,000 tons of figs?

Down in the southwest corner of Anatolia—the little strip of land that separates the Mediterranean and Black seas—there is what might be called a 10,000-acre fig orchard with about 370 managers. To put it another way: Not far from Ephesus—a city that was almost tired of life in the year 1—are 520,000 fig trees, separated into 370 clusters with one man and "some women" in every one, and producing about 135,000 lb. of figs in each.

The age of the trees in this venerable assemblage runs all the way from 1 year to over 150 years. In fact, there is no way to tell how long they have endured, for until recently replantings were never made. New growth developed from suckers that sprang from the ground and wound up among the mother tree's branches until they finally predominated and the old tree rotted away.

Little by little, as man began to cultivate, to irrigate, and then to prune, the demand for foods changed, and that wonderful balance which nature had planned to endure forever was broken. Clean cultivation gradually robbed the soil of its humus and its protection from the burning sun, irrigation packed the earth in flintlike streaks; and those hordes of insects that once thrived upon the succulent mat of undergrowth were driven to the helpless trees. All of this change did not occur in a day. Generations of men grew and died among these faithful groves, but, true to the endemic spirit of the Orient, failed to note the decline.

The final blow came in 1927, when the United States Department of Agriculture fixed a 10 per cent tolerance on all imported figs. It landed on the Oriental contentment of Turkey with a dull thud. Up to that time the 19,000 or 20,000 tons of foreign figs coming into the United States each year with what amounted to almost no control at all were in truth a sorry sight to behold. Naturals (bulk figs) were seldom more than culls, and often less. Black, ugly syrup oozed from them and spread over the floors; dirt worked its way into the bags; and armies of dejected worms crawled out—when they could stand it no longer. It is easy to believe that one captain who brought figs to us a few years back has said: "Oi'm niver without woims in me nights."

It was, in truth, a severe demand for all fig-producing countries. A 10 per cent tolerance meant that no single lot of figs would be permitted to enter the United States, or be placed on sale therein, which contained more than a total of 10 per cent of wormy, dirty, or diseased fruits; and, considering that imported natural figs were then running around 80 per cent bad on the average, foreign shippers must either sacrifice a lucrative business or clean house.

Turkey was the first foreign country to respond. Its initial effort was to treat all figs shipped to the United States with American fumigators. Next Turkish shippers placed their hans (packing houses) under the sanitary control of the American Consulate in Smyrna. It soon became evident, however, that killing the worms and washing the workers did not alone suffice to produce a good fig; and that sorting was necessary to remove those fruits which contained the "dead," as well as the ones that were sour, smutty or otherwise defective. After sorting had reached the stage of producing a product fully acceptable to the United States, Turkey then discovered that so much of her crop was being diverted to the cheaper markets, the actual net cost of production far exceeded her gross returns.

Thus far, all progress toward the refinement of figs had occurred within the packing houses at Smyrna. The packers realized, however, being confined entirely to a program of preparation and elimination, that no amount of effort on their part could possibly produce a tonnage of good material larger than that which they received from the groves. Further, if a larger percentage of marketable figs was to be obtained, it must be through a general improvement in cultivation and care throughout the district.

As the merchants of Smyrna fully appreciated the necessity for an improvement in fig quality, they were not only willing but did do all that was within their power to improve matters; however, the rather distant relationship between them and the growers in the interior acted as a stone wall which even their buying influence at first seemed of little value in overcoming.

Nevertheless, sometimes things have a way of materializing in the Orient, and, after all, stone walls are not always unscalable; especially when there is a mutual interest on each side. Such was the case in Turkey. The packers must have a larger percentage of good figs delivered to them or forfeit their most important market—America—and the growers were faced with greatly reduced incomes if they did not increase the ratio of good figs to bad ones.

The Turkish peasant usually is somewhat averse to the unsolicited visits of strangers, whether foreigners or brigands, but he does have one trait quite in common with most human beings. This is curiosity. At first, no attempt was made by the "advance guards" from Smyrna to dictate, or even suggest, changes that might be made to improve conditions. They were merely harmless but enthusiastic sightseers, so to speak, investigating the phenomenal vicissitudes of nature. As time went on, however, curiosity gradually ripened into friendship, the peasants' distrust turned to confidence, and they made every possible effort to benefit from the information available to them.

One of the first, and perhaps the most important, changes made, from the buyer's viewpoint, was to develop some form of treatment of the figs for infestation at the ranches. While the figs, like all other sun-dried fruits, are on the drying trays they offer an excellent opportunity for insects to place their eggs. Covering the trays at night prevented some of this, but was not sufficient to make a wormless fruit. Fumigation at delivery centers was next tried. While this was an improvement, it was of no value to delayed deliveries. Finally, small individual treating boxes, or fumigators, were devised. These were to be placed on each ranch close to the drying trays, where the grower could treat each day's finished product before packing it for market.

Under present-day conditions clean men and women in white uniforms sort and pack the figs for shipment.

Because of peasant fear and distrust of strangers, the first "sanitary squad" had to enter the fig-growing district as "sightseers" and gradually gain the friendship and confidence of the growers through satisfying their curiosity.

Small Fumigators Effective

The success of these small outfits was refreshing. They far exceeded our most sanguine expectations, and were looked upon by the trusting peasants almost as a gift from the Islamic spirits of their ancestors. Being small, safe, easily understood and, above all, 100 per cent effective, it was only a short time until figs were rolling into Smyrna without a worm in them. And, further, their popularity has so completely spread over the fig district that only those which are closely clustered around the principal collecting centers will depend on large vaults in the future.

Although fumigation of figs may eventually be carried to a point where the entire crop will be delivered to Smyrna 100 per cent free of worms —thereby erasing one large popular objection—there will still exist other irregularities which, from a technical viewpoint, are deleterious to the fruit. These may be collectively termed souring and endosepsis.

Souring of figs, generally speaking, is caused by various organic forms,

(Turn to page 47)

Small Mechanical
BAKE OVENS
Give *Adaptability* and *Low-Cost Operation*

¶ Choosing an oven for profitable production of baked goods depends much on its ability to handle a variety of products on a relatively small scale.

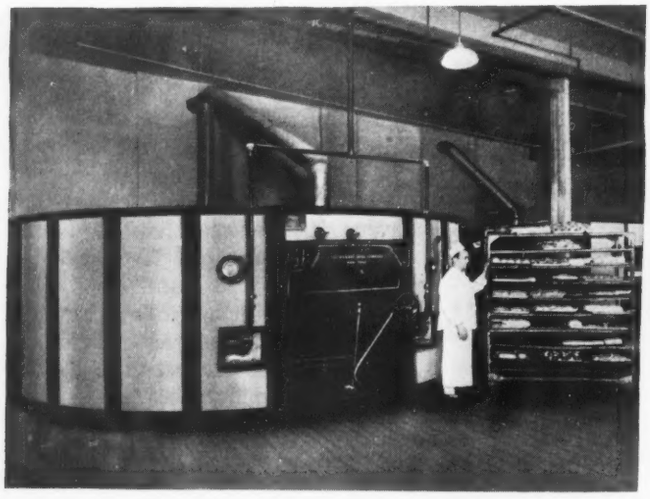
¶ The past decade has shown that during poor business periods it is the baker who can vary his products to meet the wishes of his customers who fares best.

By HARRY CARLTON
New York, N. Y.

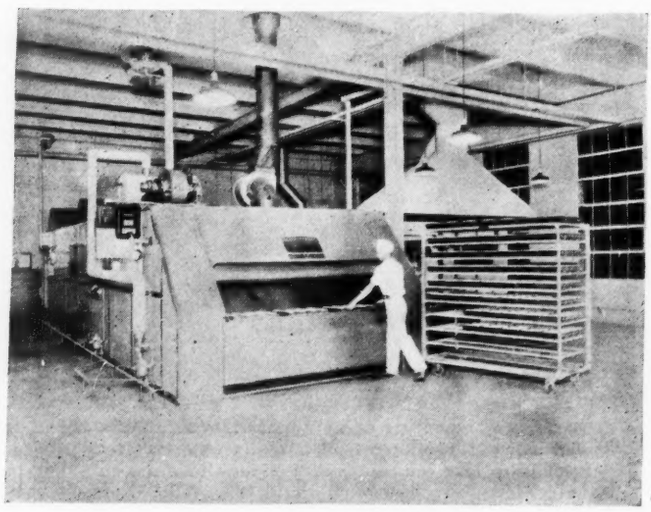
THE INDEPENDENT BAKER, contrary to general expectations prevalent during the era of frenzied finance and mergers when the large baking combinations were being formed, has been able to retain his place in competition. Closer touch with his consumers enables him to cater to their preferences, and his smaller, more versatile plant can more economically produce small batches of anything that is salable, whether it be bread or sweet goods. For these reasons the depression found him better prepared to meet reduced demands for standard goods and better able to produce a wide range of specialties than the large plants equipped for mass production.

Under such conditions, the importance of small, adaptable bake ovens is evident, either as the main equipment of a small independent plant located in the neighborhood that is served or as adjuncts to large traveling ovens in plants serving an extended territory. While it is true that the flat-hearth traveler can turn out specialties of equal quality when compared with peels and the smaller mechanical ovens, the traveler is not adapted to small batches of dissimilar goods. For instance, cookies, requiring only a 6- to 10-minute bake and a temperature of 300 deg. F., obviously cannot be put through a 100-ft. traveler at the same time as bread requiring 30 to 40 minutes and a temperature of 400 to 450 deg. F.

The variety of products turned out in the Rochester (N. Y.) Fruit & Vegetable Co., Inc., bakeshop illustrates the adaptability of a small mechanical oven. The rotary is a popular type.

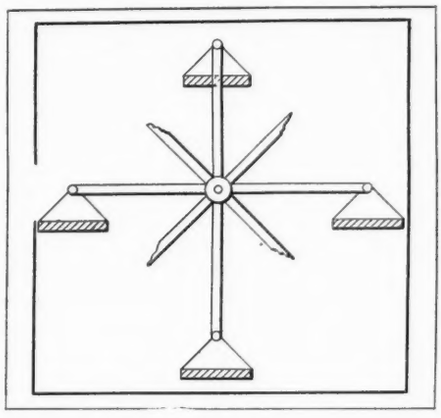


Conveyor in single-lap traveling-tray oven used by Fehr Baking Co., Beaumont, Texas, stops automatically, with a tray in loading position, just long enough to be emptied and reloaded.

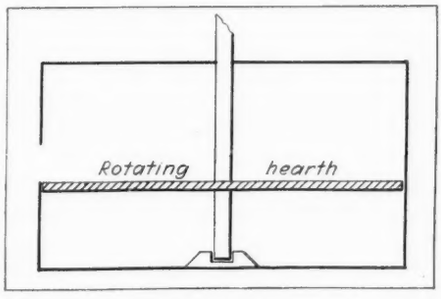


Last month we discussed the peel, or stationary-hearth, ovens that are available and listed their limitations. The rotary oven, which is both a mechanical oven and a peel oven, overcomes these limitations in part. It solves the "first in—last out" problem; a shorter peel can be used for loading, which cuts down the floor space that must be kept clear for the peel handles; and the revolving hearth helps equalize the heat application by moving the dough through the unequally heated areas. The latter point is not so important in ovens equipped with modern heating systems and proper duct or flue layout. In fact, in some recently constructed rotary ovens, the hearth is turned only to facilitate loading and unloading, and not to obtain even heat application to the product.

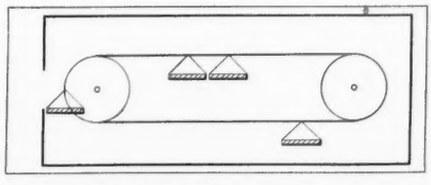
In ovens of this type the circular hearth is mounted on a vertical shaft which either rests on a bottom vertical bearing or is suspended from an upper bearing on the top of the oven. The wall construction may be all brick, all steel with light-weight insulation, or a combination, as is found in peel ovens. The hearths are of steel, soapstone, tile, or concrete mixtures. The driving gear is located either at the top or the bottom of the vertical shaft, and the hearth is revolved by hand, by electric motor, or both. The smaller rotaries usually are hand-operated and are turned only to facilitate loading and unloading, and, like the stationary-hearth peel ovens, the rotary may be obtained equipped with various heating systems developed by the different oven manufacturers for burning coal, coke, oil or gas.



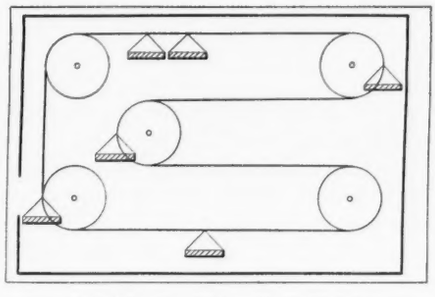
Revolving-tray (reel) oven.



Rotary oven.



Single-lap traveling-tray oven.



Multi-lap traveling-tray oven.

Rotary Ovens Have Wide Use

While many bakers use the rotary oven for baking bread, it is most popular for pies, cakes, cookies, rolls, buns, and other specialties. It is especially well adapted for baking pies. When liquid fillings are used, the shells are peeled into place on the hearth and then filled through a hose connection by gravity or air-pressure feed. In this way any danger of spilling is avoided, as the filled shells need not be handled until the baking is completed.

This adaptability for variety goods makes the rotary oven attractive to the house-to-house, retail, and smaller wholesale baker. It also is a popular adjunct to large travelers.

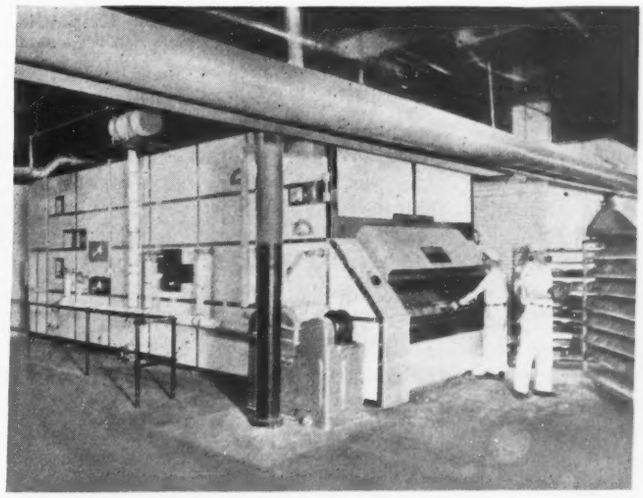
The following is a representative list of sizes and capacities of rotary ovens:

Hearth Diameter Ft.	Hearth Area Sq.Ft.	Hearth Capacity 1-Lb. Loaves Bread	Hearth Capacity 9-In. Pies
8	50	140	70
10	78	235	116
12	113	330	170
14	154	415	210
16	201	560	280

In the revolving-tray and the traveling-tray ovens the smaller baker, who ordinarily would use one or more peel ovens, has up-to-date mechanical ovens which give him practically all the advantages the larger baker has with his flat-hearth travelers. In addition they are much more adaptable equipment.

The revolving tray is built in capacities that correspond to the various size peel ovens and the traveling tray ranges roughly in capacity from that of a large heavy-duty peel oven to that of a 60x9-ft. traveler. With the moving hearths, expert peelers are not needed, as the loading and unloading are done by hand; the first dough in is the first out, thus making possible a more uniform product; less clear space is required in front of the oven for loading and unloading; and the hearth arrangements give greater area per square foot of floor space than any other type of oven.

The revolving-tray oven is not new in principle. It is a modern edition of the old reel oven, known as the "Ferris Wheel," and is used for baking cookies, crackers, and similar goods. In principle the reel oven is a series of hearths suspended from



Multi-lap traveling-tray ovens give relatively high production capacity with low floor-space requirements. Double-lap oven installed in Duluth (Minn.) plant of Zinsmaster Bread Co. contains 48 trays 20 in. wide by 7 ft. long (560 sq. ft. tray area), and requires only about 330 sq. ft. floor area.

the ends of the spokes of two wheels which are mounted at opposite ends of a horizontal shaft. The hearths, in series of two and ranging from four in the small ovens to sixteen in the large, are so hung as to remain in a horizontal position as the wheel turns.

The large "Ferris Wheel" reel ovens are still used for cracker work. The hearths are as much as 3 ft. wide and 8 or 10 ft. long. Including clearances and wall space, the oven may be as wide as 17 ft. over all. The firebox, or heating chamber, usually is in the front and at the bottom of the oven. Either gas, oil, or coal is burned and the combustion gases circulate throughout the baking chamber. The wheel can be revolved in either direction, so the goods may be moved nearer or away from the heat during the early part of the bake. Electric motors or hand power or a combination of the two are used. The wall construction is of brick.

A Freak Construction

A smaller reel oven was popular at one time for use in window bakeries. It was poorly insulated, of light metal construction, and heated by a gas burner or electric heater in the bottom of the oven. Frequently they had transparent doors or windows, so that the passerby could watch the baking. This construction was mainly an advertising stunt.

The revolving-tray oven now built for general baking work is thoroughly modern. It has well-insulated steel-panel construction with indirect heating, uniform heat distribution, and thermostatic control. Gas or oil may be used for heating.

It has a larger hearth area per square foot of floor space than any other type of oven except the multi-lap tray. Comparing a revolving-tray oven with a peel oven of the same hearth area, each oven having a capacity of 360 1-lb. loaves per batch, the peel oven weighs approximately 15½ tons and requires 175 sq.ft. of floor space, as against 5¼ tons for the revolving-tray, which requires only 100 sq.ft. of floor space.

This oven is deservedly becoming one of the most popular ovens for small bakeries or for specialties in larger bakeries. It is available in steel-panel portable construction with or without a brick-lined baking chamber.

The following tabulation gives a representative list of capacities. This particular list is equipped with 20-in. trays.

Number of Trays	Tray Length Ft.	Baking Area Sq. Ft.	Capacity, 1-Lb. Loaves per Batch
4	7	47	140
4	9	60	180
6	7	70	210
6	9	90	270
8	7	90	270
8	9	120	360
10	7	116	350
10	9	150	450

From a mechanical standpoint the traveling-tray oven is a combination of the reel oven and the flat-hearth traveler. A series of suspended hearths are conveyed through the oven by moving chains, instead of being suspended from the spokes of a wheel as in the reel oven. Being freely suspended they can be guided along horizontal or vertical paths inside the oven, always remaining upright so that the entire travel of the hearth may be used for a productive load. The hearth returns to the loading point at the end of the bake for unloading, allowing one man to perform both functions from his position in front of the oven.

The single-lap-tray oven makes a straight run from the front to the rear and back, materially increasing the hearth area to floor space ratio when compared with the flat-hearth traveler, in which the returning hearth is upside down and, of course, empty.

The multi-lap-tray oven carries the idea farther by doubling the travel up and down, or back and forth, during the baking cycle. This produces an economy of floor space and oven-wall construction when compared on a capacity basis. It is equaled only by the smaller revolving-tray oven. Different manufacturers have devised various patterns for routing the hearth through the oven. Some start the travel straight up, while others make the first run toward the rear. The object is to secure the greatest baking area with the least floor space, taking into consideration proper steam application and heat distribution.

Tray ovens are built in a variety of sizes and, apparently, there are no standard tray dimensions. However, the usual length of the tray is 7 ft., as with this length a single operator can load and unload while the conveyor is in motion. The widths of the trays are, in round figures, 10 in., 11 in., 12 in., 13 in., and 20 in. The last seems to be the most popular width. One manufacturer offers single-lap ovens with rated capacities of 900, 1,250, 1,500 and 1,750 lb. of bread per hour, and multi-lap ovens with capacities of 2,000, 2,500 and 3,000 lb. Another offers a single-lap oven rated at 1,200 lb. and a multi-lap rated at 2,000 lb. per hour.

Traveling Tray Oven Improved

The traveling-tray oven has many points in its favor: light weight, economy of floor space, low fuel consumption, and adaptability to a wide range of products. During the early stages of its development, difficulties were encountered in controlling the top and bottom heats and in the application of steam. This has generally been overcome and there are available today several excellent ovens of this type.

With improvement in heat distribution, the necessity for continuous movement is lessened and one manufacturer is advertising "intermittent motion." The conveyor automatically stops with the tray in the loading position long enough for the operator to load and unload, and then moves the next tray into position. Controls give the operator a choice of intermittent or continuous movement, as desired. This intermittent operation of the conveyor probably will be developed further.

The engineering features of the small mechanical oven are a direct outgrowth of experiences gained in the development of the flat-hearth traveling oven. These ovens will be featured in next month's discussion.

Floor-Space Ratio

THE FOLLOWING TABLE gives an approximate comparison of the relation between hearth area and floor space of various ovens of modern steel-clad design. It cannot be considered 100 per cent accurate because of the different layouts and construction features of the various manufacturers. Neither is it a guide to the output per square foot of floor space, as this will be affected by continuous or intermittent loading and unloading, and methods of handling.

Type of Oven	Sq.Ft. Hearth Area per Sq.Ft. Floor Space
Peel Oven (10x12 ft.)	.69
Revolving-Tray Oven	1.20
Rotary Oven (12 ft.)	.69
Single-Lap Tray Oven	.68
Multi-Lap Tray Oven	1.20
Flat-Hearth Traveler (100x9 ft.)	.69

Conveying BULK *Materials* BY THE *Redler* PRINCIPLE

By NIXON W. ELMER
Stephens-Adamson Manufacturing Co.
Aurora, Ill.

DURING a period of more than twenty years, in which I have been actively engaged in material handling, to my knowledge, there has been discovered and introduced but one radically new principle of bulk conveying. This development, called the Redler principle, came from England to this country, where its development and commercial application have rounded out its usefulness.

The Redler principle of bulk conveying is simple and almost self-evident when stated, but the ramifications of its applications are far-reaching. The principle which is the basis for its operations is: "The shearing strength of any loose material exceeds its friction on a smooth surface." Consequently, if we proportion the length of the line of shear to the length around the contact surface, we have a Redler conveyor which will convey horizontally, vertically or where you will.

As would be expected from theoretical grounds, this principle holds good irrespective of speed; hence mechanical conditions may be allowed to control the speed at which these conveyors may run. Thus, we obtain a large capacity in a small space, because a box having a rectangular cross-section which is completely full of moving material is inherently economical of space. And it tends to make the bulk conveying of a "flowable" solid material comparable to the distributing of the liquid through pipes by means of a pump.

An application of this principle to a combined horizontal and vertical conveyor is well illustrated in Fig. 2. The direction of travel is counter-clockwise and the material travels horizontally through the bottom run and vertically up the right-hand leg. In elevating by the Redler principle, the material does not go over the head sprocket, as is usual in other types of conveyors.

Compacted material, under a choked feed, comes in at *A* and is carried over the short division plate *B* and toward the take-up on the bottom run. The return run of the U-shaped chain operates with the closed side of the "U" on the upper side, which serves to sweep the proper amount of load from the closed feed spout to the end of the division plate at *C*. Here the division plate ends and the load drops by gravity to the lower, or carrying, run, the height of which is slightly more than the top run. Falling free by gravity into the larger space below contributes the natural effect of loosening up any compacted material. Thus, in addition to the interesting property of loosening up in transit any sticky and compressed material, the device utilizes the return run of the chain to make a combined feeder and conveyor without additional expense.

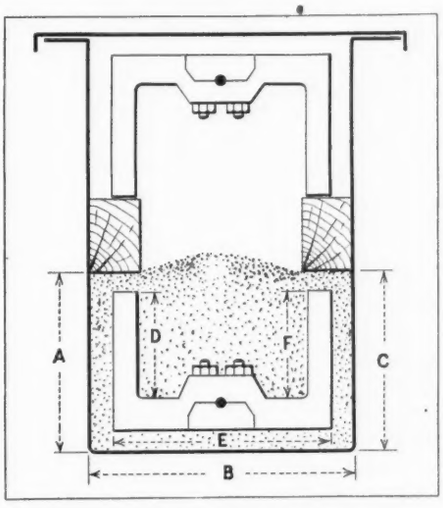


Fig. 1—Grain, flour and similar materials are carried in lower half of inclosed troughs as the skeleton flights move along without touching sides or bottom of trough.

In a sugar refinery where a Redler conveyor was handling wet, bright, crystallized sugar from the centrifugals, the chemist was worried lest the steel casing of the conveyor would rust and scale off into the sugar during its closed-circuit transport in a horizontal plane. In practice, however, it was discovered that the interior sides of the casing were glazed over with a protective film of sugar which was maintained automatically. Under test conditions the bright surfaces of the individual crystals were not marred and the sticky, wet mass was freely circulated over full outlets and freely discharged wherever an outlet was not full. Of course, there always was one open outlet or a blockade would have occurred clear back to the centrifugal, and production would have been interrupted. Wherever it is necessary, the casings of these conveyors are made from 18-8 chromium nickel steel to prevent corrosion.

In a salt plant the problem was to circulate the free-flowing table salt, hot from the dryers, with a choked feed over the packaging machines. The idea was to allow each machine to take whatever quantity it needed, the remainder being automatically recirculated and discharged on the next trip around. This was accomplished by a Redler circuit conveyor which, under test, actually continued to run without serious increase of power with the inlet open and all outlets closed. Ordinarily, the usual procedure would be to interlock the controls so that the conveyor would stop when the filling machines stopped. But, because of the type of electric motors in use and the current available, the manufacturer felt that he could not do that. The experience furnishes an interesting analogy to pumping a liquid through a pipe where, as the pressure reaches an equilibrium, the other factors are stabilized as well.

Another plant had a problem of conveying for a considerable dis-

This article is an abstract of a paper read by Mr. Elmer to the Material Handling Division of the American Society of Mechanical Engineers at New York, Dec. 5, 1933.

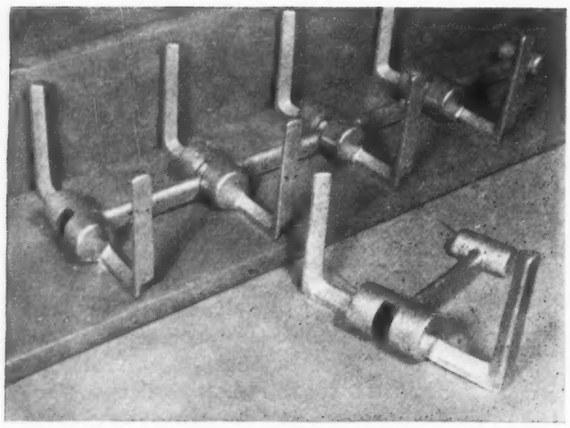


Fig. 3—Skeleton conveyor flights may be assembled much the same as link chains. After discharge, the empty U-shaped flights return through the conveyor in an inverted position and carry a uniform load from the closed feed spout to the end of the division plate, C, Fig. 2

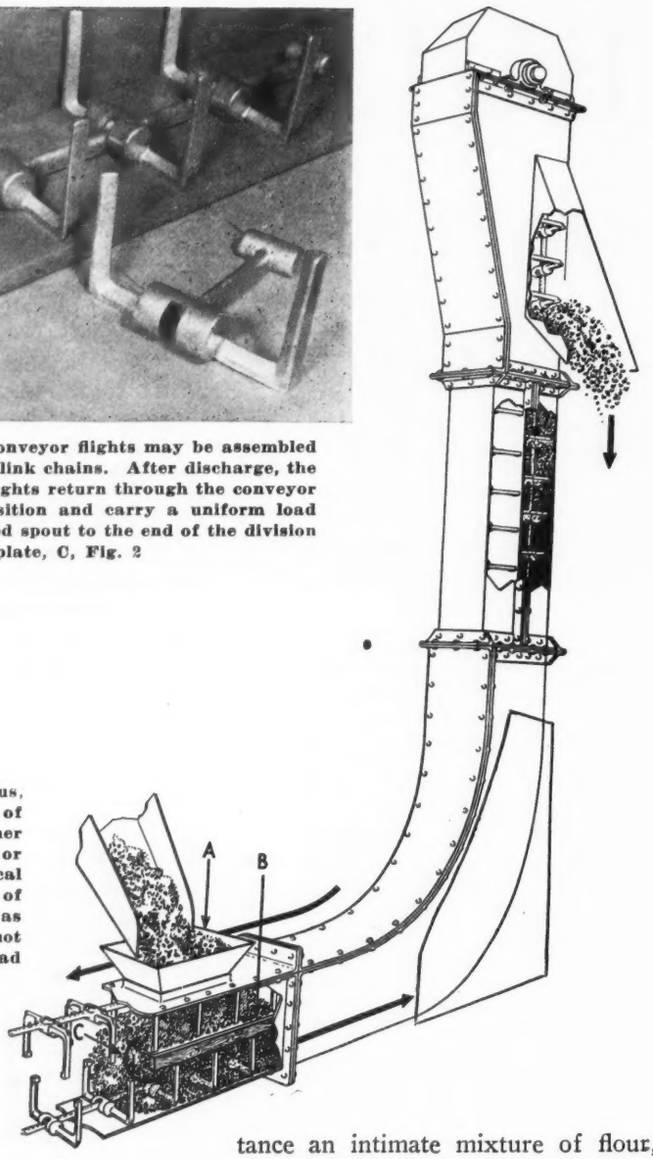


Fig. 2 — A continuous, uniform discharge of material results whether conveyor is horizonal or vertical. In the vertical type the discharge is of an "overflow" nature, as the material does not pass over the head sprocket.

principle was utilized for carrying hot, wet grain from cookers to the flaking rolls, and later for elevating the flakes to packaging machines with practically no crumbling of flakes. In this installation there also was utilized the principle that a Redler conveyor need not operate in a straight line but can move around obstacles.

Starch is handled steaming hot in another plant, horizontally from the 8-in. openings at the bottom of a hopper, then vertically to a point four floors above, and finally is distributed horizontally in measured quantities to four screens. The vertical elevator is adjusted to feed itself the desired quantity of material while the horizontal measuring conveyor measures one-quarter of the material received to each of the first three screens, with the remainder going to the fourth. If by any chance the available supply of material should fall below the quantity needed for the three-quarter capacity, the fourth screen would, of course, receive no material. Such a condition, however, is an unusual occurrence in a plant operating 24 hours a day and 7 days a week.

Has Low Power Cost

An interesting record is told by the 24-hour ampere meter chart taken on the motor driving the 9-in. "H" type conveyor. Allowing for the power factor and the recording meter's factor, this represents a power consumption of between 4½ and 5 hp. Each car from the dryer section of the plant contains about 2,000 lb. of starch, and the curve on the chart shows plainly in certain sections—as, for example, from 7 to 8 a.m.—the exact number of cars dumped.

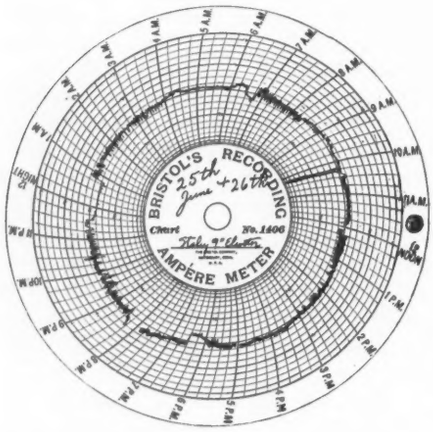
In a chocolate plant, during the hot weather of 1933, a conveyor operating on the Redler principle having both horizontal and vertical runs conveyed, elevated and discharged powdered cocoa in a perfect manner, even when the weather was so warm and damp that the material would not discharge from a bin having two sides vertical and the remaining two sides at 60 deg.

The mass system of moving materials has been thoroughly demonstrated and widely applied in many fields quite outside the food industries. It has been used also for handling hydrated lime, stucco, abrasive soap powder, powdered talc, ores, potash, sulphates and soy beans.

tance an intimate mixture of flour, vegetable shortening, baking powder and salt. From the point of view of the user, it is important that a conveyor operating on the Redler principle is self-cleaning and the material lose or gain but little heat in transit. This is to be expected, for this principle of conveying results neither in agitation of the material nor mixing in of air. A solid mass of material moving in its conduit cannot mix with air or produce dust.

The self-cleaning properties were of vital importance here, for shortening will turn rancid and flour is subject to weevil infestation, neither of which conditions is to be tolerated in a food product. In nine months of operation it was not found necessary to clean the Redler conveyor, which was several hundred feet in length in this plant—something of a contrast to the weekly cleaning required when using another type of equipment. Also at this plant the Redler

Fig. 4—Ammeter readings serve as production charts as well as a record of power consumed by motor driving a 9-in. "H" type conveylor in a starch plant operating on a 24-hour schedule.



Intercommodity Competition

Is Your Problem Also

By CLARENCE BIRDSEYE
Director, The Birdseye Laboratories
Gloucester, Mass.

New varieties and new forms of food compete for oversupplied markets

OVERPRODUCTION has already given rise to an intense intercommodity competition in the food industry which is making itself felt in a great many ways even now. There is competition between the main classes of foods; between nearly related foods within each class; between food production areas; and even between the different marketable forms of the same product grown in the same area for the same market.

The inter-area competition is being intensified constantly by the development of new varieties, more efficient production means, and better transportation.

This same competition will be just as intense in the transportation of foodstuffs as in their production and preservation. Also competition will extend to different types of storage facilities, for who can tell now what proportion of our future food supply will be held in cool storage, frozen storage, or at room temperature? It is equally certain that there will be competition among merchandising methods and means.

I do not believe that it is possible to forecast accurately even the major effects of the inevitably intensified competition which must result from our rapidly increasing ability to produce not only a surplus of foods for a tremendous variety of kinds and forms of foods. Nevertheless, let us carry our speculations a little further. For instance, how will the industrial and agricultural—and therefore the social and political—future of New England be affected by this competition between locally grown foods and those shipped in from other sections of the country? Will New England in the future produce locally tremendous quantities of fresh fruits and vegetables during their natural growing season and quick-freeze and cold-store them for its own use during the winter and spring? Or will it abandon entirely the production of these and many other agricultural products, devoting its time and energy almost exclusively to the production of sea foods and manufactured goods other than foods, and importing its entire supplies of fruits, vegetables, meats and poultry from distant sections?

What will happen to the fisheries of the Great Lakes and Mississippi Basin when the tremendous sea foods resources of the Atlantic and Pacific oceans are made fully available to even the most isolated hamlets of the Mid-Western states? How will the influx of such sea foods affect the prices for competitive locally grown products such as meats, poultry and eggs?

When perishable foods are made substantially imperishable, thus greatly reducing the necessary spread between producer and consumer, will their great availability and lower prices cause them to become more effective competitors of the cereals?

If the consumption of fish increases, will that of meats and poultry decrease correspondingly; or will fruits, vegetables, cereals or dairy products be the part of the diet which will be crowded out of the national stomach?

If, in the future, "processing" operations are utilized to preserve a very much larger proportion of our diet, what will be the effect on the social, economic and financial structure of our agricultural areas? Will the small independent farmer give way before the great industrialized ranch; or will agriculture become industrialized by the multiplication of individually owned truck farms grouped around food-processing plants? Will market gardening operations strategically located near large centers of population counteract our ability to make perishable foods imperishable and thus to produce them long distances from consumption points?

How will the fight to overfill the human stomach affect the future of our transportation system? One refrigerator car of quick-frozen spinach with all waste eliminated at the point of production will carry 7½ times as many edible portions as a similar car carrying fresh spinach as ordinarily shipped. The same car will transport approximately 3½ times more edible meat in packaged form than as chilled quarters. When meats and poultry are reduced to consumer cuts, packaged, and quick-frozen in production centers, what will become of the facilities now used to haul live animals to packing centers.

Will the necessity of transporting foods at low temperatures render obsolete present investments in poorly insulated refrigerator cars and ordinary ice-making plants; or will improved design and construction enable ice and salt to compete successfully with brine ice, solid carbon dioxide and mechanical refrigeration as car-cooling means? What will be the social and economic effects of eliminating inedible waste at the point of production? Will spinach stems and pea pods be used to produce wall board and silk dresses?

(Turn to Page 22)

From a talk presented before the Boston Section of the American Marketing Society.

WHEN DOES *Warehousing* PAY?

By SPENCER A. WEART
Jackson Heights
Long Island, N. Y.

EVERY WAREHOUSE has a definitely limited territory. Within this territory the cheapest distribution of goods from plant to customer is by carload quantities to the warehouse, and thence in small lots to customers. Outside this territory, the cheapest distribution is directly from plant to customers. The sales within the territory must be of sufficient volume to enable carload shipments to the warehouse to be redistributed before warehouse carrying charges swallow up the saving on freight; otherwise, it may be that the warehousing of stocks at the point in question is not warranted. The determination of warehouse territories and of the points at which warehouse stocks are justified are not complicated problems; they may be solved readily by the application of a little common sense to mathematical and graphic analysis.

First, there must be determined the limits of the territory that may be served economically from a warehouse. For a given commodity shipped from a given plant the variable factors affecting a warehouse's territory are:

1. Distance from plant to warehouse.
2. Carload freight rate from plant to warehouse.
3. Less-than-carload freight rate from plant to customers.
4. Less-than-carload freight rate from warehouse to customers.
5. Warehouse charges.

The five variables may be plotted as in Fig. 1, in which "Miles" are equated against "Cents per Hundredweight." It should be understood that the "Warehouse Charges" in the figure are the average monthly handling and storage charges, plus monthly capital charges, multiplied by the average number of months the goods are in storage. To distribute from plant to customer via a warehouse the total cost per hundredweight is the sum of carload freight rate to warehouse, plus warehouse charges, plus less-than-carload (l.c.l.) freight rate from warehouse to customer. To distribute from plant to customer directly, the total cost per hundredweight is simply the l.c.l. freight rate from plant to customer. Patently, there must be some points at which these two total costs — one direct to customer, and one to customer via the warehouse—are equal. These will be the "break-even" points defining the outermost limits of the warehouse territory. A and A^1 in Fig. 1 are the two intersections of the total cost curves, and are the "break-even" points, the warehouse territory being the area between them.

While the graphic analysis is basically correct and is essential to an understanding of the factors defining warehouse territories, unfortunately, in practice the freight rate curves are not the smooth, evenly rising lines illustrated. Fundamentally, freight rates increase with distance for a given commodity, but the rate structure of common carriers is affected by many other factors than distance alone. It is necessary to apply the theory developed in another manner

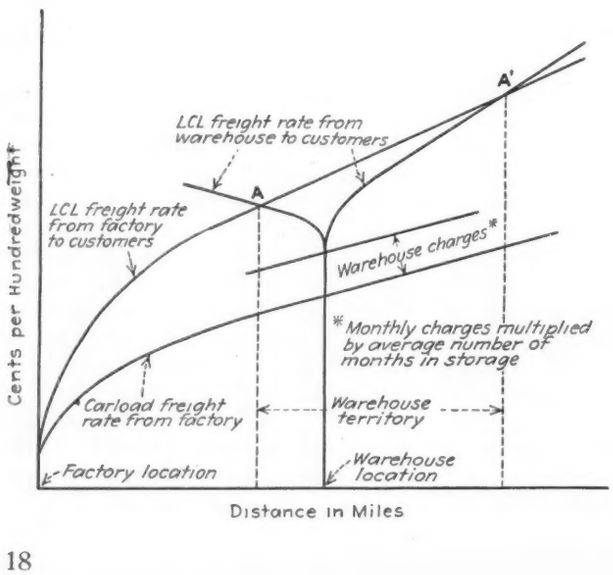


Fig. 1—Territory which may be served economically from a warehouse is represented in the area lying between the dotted lines projected from the points *A* and A^1 to meet the base line at right angles. This line denotes distance in miles. *A* and A^1 indicate "break-even" points between the cost of shipping l.c.l. directly to customer and indirectly via warehouse.

Fig. 2—Coffee shipped from Atlantic seaboard into territory bounded by heavy black line has lower delivery cost when sent via Chicago warehouse than when shipped l.c.l. direct from seaboard. Points touched by line are "break-even" points.

Fig. 3—When overhead and handling charges incidental to warehousing are equal to or greater than the freight differential on the tonnage of goods handled it becomes unprofitable to ship via warehouse.

before specific warehouse territories may be determined practically.

Everyone is more or less familiar with the weather maps on which all points having equal barometric pressures are connected by a continuous line, or with the civil engineer's contour plats in which all points of the same elevation are similarly connected by a continuous line. Borrowing this device, a map may be constructed which will show all places having the same freight rate from any specified point connected by a continuous line. Fig. 2 is a map of the Chicago area in which the continuous dotted lines pass through all towns for which the l.c.l. rate on coffee shipped from the Atlantic seaboard is the same. The "0.90" dotted line, for example, passing northward through central Illinois, indicates that coffee may be shipped from the East to all towns on this line for $0.90 per hundredweight in l.c.l. quantities. Farther westward, in eastern Iowa, it costs $1.00 per hundredweight, and so on.

In Fig. 2 there also are a series of continuous solid lines. These lines are based on the total cost of coffee shipping expense from the Atlantic seaboard to the various towns via Chicago—shipping carloads to Chicago, warehousing in Chicago, and reshipping via l.c.l. freight or truck to the various towns. The "0.80" solid line encircling Chicago, for example, indicates that carloads of coffee may be shipped in small lots to the nearby Illinois, Indiana, Wisconsin and Michigan points on this line for a total over-all cost from the Atlantic seaboard of $0.80 per hundredweight.

Just as in Fig. 1, as the distance from the warehouse increases some

● Conclusions regarding warehouse locations and territory boundaries are mere guesswork, unless the economic factors incidental to making less-than-carload shipments are analyzed.

● Narrow margins of profit on sales may be wiped out by costs incidental to warehousing which are in excess of differential between carload and less - than - carload freight rates.

● On the other hand, savings made by shipping via warehouse may give rise to a true profit.

points are found to which it is equally cheap to ship directly from the plant (in this case at the Atlantic seaboard) or through the warehouse. Such towns are the "break-even" points marking the limits of the warehouse's territory. In Fig. 2 the "break-even" towns are the ones located on both the solid and dotted "equal-rate" lines—that is, at their intersections. The $1.20 line for shipments made via Chicago intersects the $1.20 line for shipments made directly at a point in southeastern Minnesota, labeled *a* on the illustration, and again in central Iowa at *j*. Here, then, are two of the western limits of the Chicago warehouse reshipping territory. Similarly, points *b, c, d* and others, are found. Connecting the points by the solid heavy line (following county boundaries) the area is inclosed for which coffee from the Atlantic seaboard may be economically warehoused in Chicago and reshipped.

If warehouses should be set up at other points—for example, Indianapolis—the effect would be to push back the Chicago warehouse boundaries toward Chicago. The problem of defining the new boundary is easily solved: it is necessary merely to locate the towns to which the total over-all cost via Chicago equals the total over-all cost via Indianapolis, using the method just outlined.

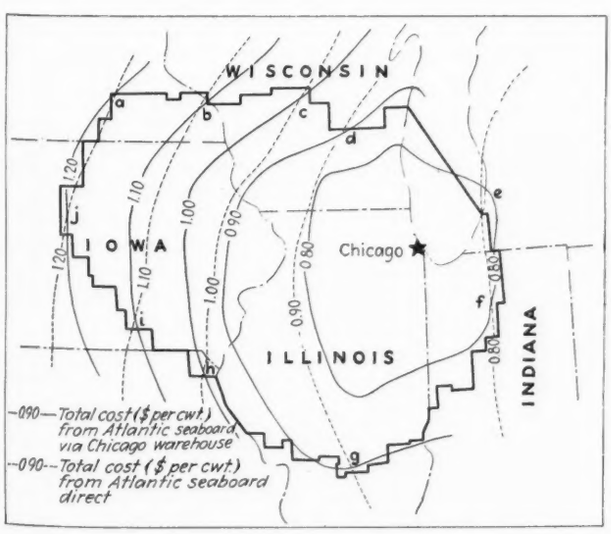
There are several general rules which may be formulated in regard to warehouse territories:

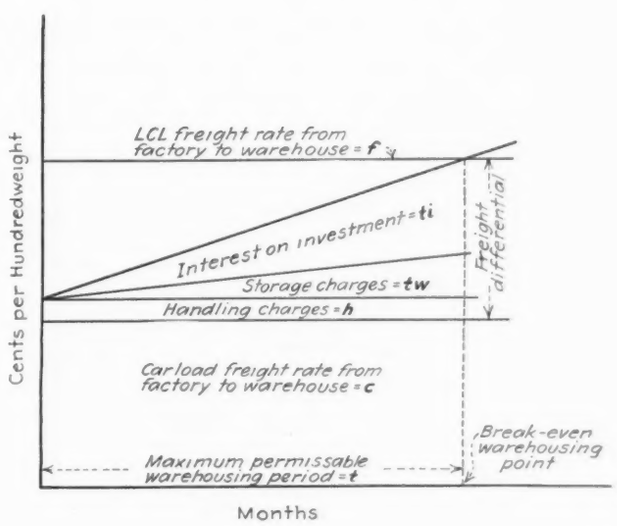
1. The smaller the differential between carload and l.c.l. freight rates from plant to warehouse, the smaller will be the warehouse's economical territory, and conversely.
2. Since freight rates vary approximately with distance, the nearer the warehouse is to the plant, the smaller will be the warehouse's economical territory, and conversely.
3. When the differential between carload and l.c.l. freight rates from plant to warehouse becomes so small as to equal the average warehousing charges, distribution via the warehouse to points outside the warehouse city is uneconomical.

When making an analysis in practice, of course, it is to be understood that the cheapest practicable routes, whether by rail, water or truck, are taken to determine the rate lines. In actual practice, too, there are certain intangibles, such as customer service, which must be taken into account; these will be discussed later.

Once the territory within which the warehouse may distribute economically has been determined, the question quite properly may be raised as to whether or not the sales volume within the territory so fixed warrants carrying any stock at all in the warehouse. Forgetting, for the moment, the question of intangible benefits of a warehouse stock, it is obvious that in order to obtain any monetary benefit from warehousing, a carload

(Turn to page 48)




LCL freight rate from factory to warehouse = f
Interest on investment = ti
Storage charges = tw
Handling charges = h
Freight differential
Carload freight rate from factory to warehouse = c
Break-even warehousing point
Maximum permissable warehousing period = t
Cents per Hundredweight
Months

Careless Transfer OF RAW MATERIALS Paves Way to Future Losses

By HARRY STINER
New York, N. Y.

ONE of the very important branches in the handling of raw materials for food plants is transportation. Temperature changes, type and condition of the transporting vehicle and traffic rules must always be considered; also the container, its weight, construction, shape, and often its appearance are important. Then last, but far from least, receiving inspection.

Temperature conditions can never be foretold many days in advance. An order may be placed for the shipment of a certain perishable foodstuff at a time when temperature, humidity and every other feature are ideal, then before the material can be assembled and sent on its way an entirely different condition obtains and the product is damaged. What is of more frequent occurrence and even more hazardous is when the shipment is started under ideal conditions and meets the reverse before it arrives. Or when everything is at its worst in the beginning and an extra effort is made to protect the shipment, but on the balance of the trip the weather is perfect. In the first there is a straight loss, in the second an unnecessary extra expense.

A convenient and clean way of handling sugar and other materials in cloth bags is to use lift-truck platforms both for receiving and storing the material until used.

Perhaps the majority of the raw materials used in food plants would not be classed as perishable from a temperature angle; especially from the comparatively small differences they are likely to encounter on any one trip. There are many materials, however, to which a freezing temperature would be ruinous. And there are others—many of them, too—which break down rapidly and permanently when warmed up to a normal temperature, or even only slightly above their freezing point. These products are being shipped at all times of the year and in all directions. In summer, those requiring low temperatures are always refrigerated. It is the inevitable and is accepted accordingly. But during several months of the year, especially in the northern states, the temperature at times reaches a point along the entire route that would easily permit these materials to be shipped without extra protection. This may at times mean a considerable saving in several ways and is often a temptation. Possibly the commodity is one that does not necessarily require refrigeration to preserve it—such as dried fruits, nuts and the like—but has been held in cold storage to protect it from insect pests. In cold weather such products may be shipped as regular freight, and unless they are exposed to a thawing temperature too long, their reserve cold will be retained sufficiently.

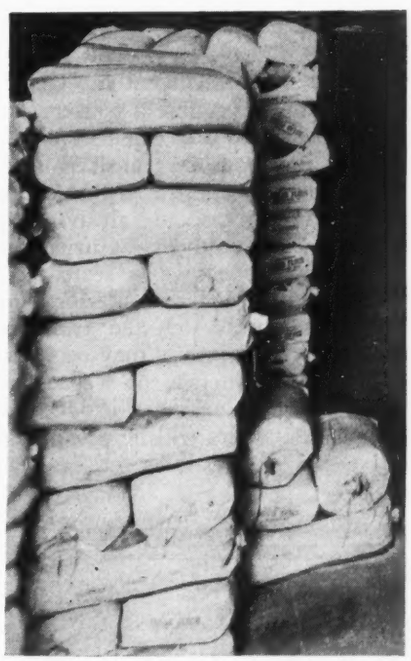
These products all represent an investment, however. If they reach the plant in the state they were shipped in it is possible to convert them into a profit, but if they are damaged on the way, even though the loss may be comparatively small, it is a loss nevertheless and may very easily amount to far more than the cost that proper protection would have entailed. If a shipment can be made and no damage result, all well and good, but a reasonable doubt is almost always sufficient cause for caution. Too much forethought can hardly be given to these possible disorders when planning a shipment. It is good insurance and often will amount to just the little that is needed on a closely drawn profit.

The type and condition of a vehicle, as well as the time it consumes in the transfer, also are important. Certain commodities may be carried the year through in ordinary vehicles. Others require a construction which will pass through freezing tempera-

tures for several hours or days without reaching a dangerously low point on the inside—the "reefer," or refrigerator car, for example. This same type frequently is employed to move reasonably short distances, during the warmer periods, materials that are taken from cold storage in a frozen or semi-frozen condition and which, if properly insulated, will hold their own temperature down without icing. The economy of non-icing types should not be carried too far, however, for reefers, although well insulated, are not vacuum bottles. The temperature will rise in them on warm days, and whenever the material is subject to injury from this change they always should be iced.

The time consumed in transferring certain commodities—especially the commonly termed perishable types—is often of considerable import. Unexpected delays usually are the losing factors in this problem. The time elapse necessary between any two points in nearly any type of transportation service generally is understood, but unlooked-for accidents or delays from any number of sources are always possible. If the material being shipped is perishable and it is in refrigerated cars, there is a fair chance generally that additional ice can be obtained to carry through. But if, as previously discussed, the product has been taken from cold storage and is being sent by common freight, and is dependent upon its ability to hold its own temperature down during the regular transit time, this extra one, two or three days' delay may mean its complete spoilage, or at least a relative depreciation. Here again those two elements—chance and safety—take their place in the economic program.

The construction of the carrying vehicles seldom calls for criticism. Those intended for ordinary freight are generally tight enough to retain the commodity and keep it dry. If it is a reefer or any type of refrigerator it usually is tight and well insulated. They are worthless otherwise. Their condition as to cleanliness, however, is another matter. With many raw materials the cleanliness of the carriers is of paramount importance—not only as to the actual dirt or trash that is left in them from previous shipments but from infestations of insects, mites and, occasionally, rodents. Whenever an infested shipment is carried from one place to another the vehicle is almost certain to retain a fair percentage of the pests. They collect in the cracks and crevices of the vehicle, where no amount of sweeping will reach them. Only hunger or more vibration will drive them out; and whether the next shipment is an attractive food to the pests or not even edible, a plentiful supply of these homeless pests will in all probability get on the material or its containers to be later carried into the plant storeroom. All vehicles carrying raw materials of any type should be fumigated or otherwise sterilized after each shipment. Unfortunately, this does not always occur and even less often is it done thoroughly—unless, of course, the ones concerned with the future of the material take a personal interest in the matter.



Flour and similar raw materials shipped and stored in bags should be protected against contamination from the floor and should be piled to prevent shifting and tumbling down with possible bursting of bags.

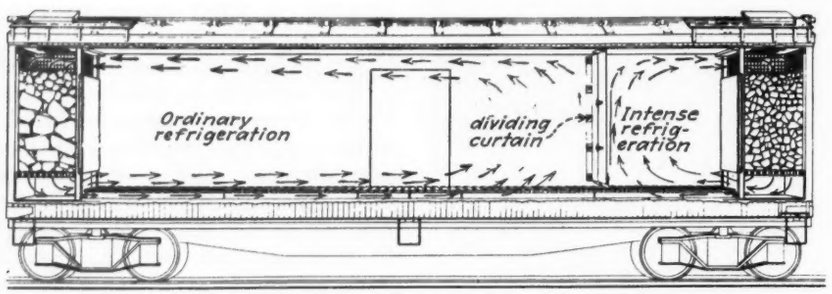
Little can be said or done about traffic rules by the shipper. Whether by rail, water, over the highways or through the air, each carrier operates whenever possible on a fixed and predetermined schedule. However, it usually is possible, other things being the same, for a shipper to choose from two or more carriers one which will deliver his material sooner or with more dispatch after it does start, or, as often obtains, with more frequent shipments than another. Familiarity with and close study of all schedules in which one is likely to be interested will often guide the future to smiles instead of tears.

The container in which a commodity is shipped occasionally casts an extra burden on both the carrier and the shipper. Still, the types used have been standardized in most cases and, while it would easily be possible to alter many of them, and possibly in some instances to the betterment

Small-capacity refrigerator cars and refrigerated-truck service have made the shipping of perishables in small lots safer from damage due to temperature changes. Open-truck transfer of materials from protected storage, from receiving points for shipments in large quantities, and from plant to distribution points ofttimes gives rise to deterioration.

of their contents, experience has shown that the change is not always as advisable from an economic standpoint as is the adjustment of transportation requirements. Flour, for instance, is not only stored in cotton bags but is similarly shipped. Fresh meat—especially wholesale—seldom has more covering than a single gauze wrapper; while smaller meats, poultry and the like come in boxes or barrels that are far from insect-proof. Many fresh fruits and vegetables are shipped in open-work crates, while commercial dried fruits and nuts either come in relatively open mesh bags or in boxes, most of which are neither water- nor insect-proof. Cheeses usually are shipped in reasonably dirtproof boxes but they are not by any means proof against the little mites that love them.

In cases such as these the condition of the carrying vehicle must be adjusted to favor the container. You would not want your flour shipped in a car or truck that leaked or that was dirty and populated with several kinds of hungry pests. A cotton bag would be no protection in that case. You would not care to receive a shipment of meat with coal dust and the like all over it. Nor would you wish to open a box of fruit or nuts two months after you had received them and find that they were badly infested with mites and insects from the car they came in.



Shipping of materials requiring different car temperatures is made possible by the use of dividing curtains in the ordinary ice-cooled refrigerator car. It is even possible to have one end of the car under refrigeration and the other cooled but not refrigerated.

Open-work containers, whether boxes or bags, must be protected from contamination while in transit or loss is inevitable. Even tight containers, while protecting their own contents, may and do carry many pests on their exteriors into the plant from contaminated vehicles.

Carton stock is shipped in bulk—no wrapping at all. To mention paper stocks of any kind in connection with pests may seem rather far-fetched; but let us see. Suppose your plant was clean, and it had just cost you money to make it that way; that a load of carton stock has been delivered, and taken into your warehouse; and that this stock has been shipped in a car or truck that has not been sterilized after hauling several loads of different kinds of merchandise, such as: infested cheese, wheat, dried fruit, and similar products. Experience has proved that certain storage moths and beetles will breed in carton stock readily, and storage mites are fond of it; as for mice, they almost prefer it. If the car in which your stock came was infested, you may rest assured you are feeding some of those pests now.

Receiving inspection will often mean much to the food plant if done promptly and intelligently. Generally, the only recourse a concern has to compensation for damages occurring to its goods in transit is from consistent inspection at the receiving end. This work should always be at the door. Here the light usually is better, small openings in sealed containers can be seen, and interior damage often can be detected from the outside. Small insects may be found on the outer surface of a package, thereby suggesting more inside; also leaking containers will be discovered. All these abnormalities, or suspects, can be set aside at the door with much more assurance of their being cared for later than when taken into the storeroom.

When materials are purchased as requested and turned over to the transporting companies, all future knowledge of their condition or shortage must come from the receiving end. Careless handling both during transit and upon arrival amounts to a heavy toll in commodity shipping. This tax is not only due to actual loss of materials or depreciation in container salvage but in many instances the container will be so slightly damaged that a rebate claim cannot be made and still be sufficiently open that moisture and storage pests will enter and spoil the material while in storage.

Occasional inspection, delayed inspection or inspection by someone who through ignorance or lack of interest neglects to see and care for the things that should be done can mean only one thing to the food plant receiving the goods: loss.

In the next issue of this series, pest control, its various phases, the common pests encountered, and their control in food plants will be discussed.

Intercommodity Competition Is Your Problem Also

(Concluded from page 17)

Will fish flour become a widely used human food?

How will quick-freezing affect canning operations Will the rapidly increasing use of paper board for food containers materially affect the markets for lumber and tin plates?

So far I have spoken of the food supply as a purely domestic problem; but when perishable foods are made substantially imperishable and time and distance eliminated except as financial factors, it is perfectly obvious that our food problem will become increasingly international in scope. When a pint of quick-frozen Oregon raspberries is consumed for a New England breakfast in January, it is quite probable that several bananas may be crowded off the breakfast table. On the other hand, when highly perishable tropical fruits are quick-frozen and made available throughout the Northern states, what will be their effect on the consumption of fruits grown in this country?

I cannot tell you the answers to any of the questions I have asked, but I do know that the fight for space in the human stomach is going to be increasingly intense and complex. Nobody can accurately foretell the results of any war, but I do not hesitate to prophesy that this war between foods is going to have a tremendous effect on the social and economic structure of this country, and that it will be reflected in worldwide agricultural changes and perhaps in international relationships.

Over the Bumps With the

Acme

"Between halves" Walter H. Campbell privately explains to Senator Royal S. Copeland why he wants revision of the Food and Drug Act.

"TUGWELL" BILL

ROUND ONE of the battle of the Food and Drug Administration to secure a new food, drug and cosmetic law came to a close at 7:20 p.m., Friday, Dec. 8, when Senator Royal S. Copeland thanked the large audience for its assistance and patience, and announced adjournment of the first public hearing on S. 1944. He added, however, that there might be another supplementary hearing before the reconvening of Congress on Jan. 5, 1934.

The committee, consisting of Senators Copeland, McNary and Caraway, appeared to have greatly underestimated the public interest in the measure, for long before the appointed hour on Dec. 7, the hearing chamber was filled to overflowing and necessitated removal to the minority caucus room. Yet even here there were far too many spectators for the seats available, and not until the second day were there chairs to go around.

After a few introductory remarks by Secretary Wallace, the hearing began with Walter H. Campbell, chief of the Food and Drug Administration, devoting the next five hours to a very thorough and careful explanation of the weaknesses of the present law and the need for a new law which would enable the Food and Drug Administration to do the work which lately it has been criticised for not doing.

Dr. J. H. Beal, dean of American pharmacologists and for years chairman of the board of trustees of American Pharmacopœia, was the principal witness in the remainder of the day. Under his genial irony and sarcastic criticisms many of the drug features of the bill fared ill. He showed that spectacles, horse collars and dog muzzles as well as the definition of what is medicine would come under the jurisdiction of the Secretary of Agriculture. Even good-natured Senator Copeland was moved to inquire why there had not been any conferences with the authors of the bill prior to introducing it into Congress, to which the elderly pharmacologist replied that he had been chasing them around Washington all summer, but had not been able to catch up with them.

On the second day of the hearing, the anti-Tugwell faction had things pretty much their own way, until in the late afternoon Arthur Kallet and Dr. F. J. Schlink, authors of "100,000,000 Guinea Pigs," representing the organization known as Consumers' Research, Inc., demanded that the hearings be transferred to another committee where the bill could receive what they termed a fair hearing. The bill, said they, was not half strong enough to give the consumer proper protection, yet was as much of an improvement over the present law as could be expected in this day. They demanded the change of hearing committee because the chairman of the committee, even on the previous evening, had been broadcasting on the Fleischmann hour, participating in a program in which certain advertising claims, they alleged, had been made that were gross exaggeration.

"Have you any evidence," inquired Senator Copeland, very gently and with great restraint, "that there has been any unfairness by the chairman in the conduct of this hearing?"

"Yes, we have," asserted Dr. Schlink. "Fairness in a hearing goes way beyond a courteous listening to the objections from those whose activities will be affected by this bill . . ."

"Thank you, Dr. Schlink,"* said

*Dr. Schlink was named as a special assistant in the consumer division of N.R.A. on Dec. 16. He will report directly to General Johnson, it is rumored.

Senator Copeland, and turning to the audience he added, "Dr. Schlink testified on my invitation. He had not asked for an opportunity to speak."

From the consumers' angle, Mrs. William Dick Sporborg, a prominent clubwoman of Port Chester, N. Y., gave a careful analysis of the bill. Her very vigorous speech gave evidence of a thorough-going research and investigation of the bill. Speaking as a consumer and as chairman of the New York anti-crime crusade, she demanded protection for herself and her family and all other consumers from fraud, deception and hazards to health. The old law had loopholes aplenty; the new law appeared to her to offer much of the desired protection, but could it be enforced? Then followed a searching analysis that brought cheers from the manufacturers, particularly when she compared the probable frailty of inspectors under the voluntary inspection system to some of the lamentable conditions which have arisen under prohibition laws.

Wants an Effective Law

"Give us a law with teeth," she demanded, "not a law with false teeth that will slip and slide!"

Other consumer witnesses, except Mrs. Malcolm McCoy, of New York Federation of Women's Clubs, for the most part indorsed the bill *in toto,* with no comments or reservations that would reveal an inquiry into the manifold possibilities under it, such as had been exposed by other witnesses from the manufacturing, publishing and advertising agency groups. Mrs. McCoy praised the principle of the bill but declined to indorse it until the many pending modifications were written into it and the bill could then be examined.

Sebastian Mueller, vice-president in charge of production of H. J. Heinz Co., expressed the belief that his company could easily comply with the provisions of the bill with but few modifications of practice, but stated that in his opinion there should be a separate law for regulating the food industries. He also asked that Sec. 3 (b) be modified to prohibit all synthetic colors except perhaps in such colorless foods as ice cream or confectionery, where the consumer expects color to be added. Standards of quality called for in Sec. 11 should be eliminated, while the inspection powers granted under Sec. 13 are entirely too broad, he said. Inspection of methods and processes should not be required except in those cases where there is sufficient evidence to prove that it is necessary for the protection of public health.

Recognized Need for Revision

A.G.M.A. (Associated Grocery Manufacturers of America) was represented by Charles Wesley Dunn, who declared that Walter Campbell is right in his major premise of need for revision of the law. Food and drug manufacturers also recognize the need of further amendment and strengthening, and take exception only to the form by which these ends are to be attained. He mentioned in particular the unduly broad and indefinite language and other features which would be contrary to good public policy. In defining specific points of objection, he mentioned the use of the word "impression" in Sec. 9 (a) dealing with false advertising, saying that "an impression may be wholly apart from the facts." "For example," said he, turning to Senator Copeland, "You may get an impression that I am a thief. On the theory of this bill, I could be put in jail for stealing." As an improved modification of the language of Sec. 9 (a) he proposed " . . . if false in any material particular related to the purposes of this act."

The provision to give unlimited powers to the Secretary of Agriculture to promulgate regulations with the full force of law he declared to be unsound in principle and contrary to public policy. The British, Canadian and present United States food laws all require that the burden of proof of guilt of violation be on the government, but this bill reverses that policy so that a manufacturer who has been brought into court has the burden on him of proving that he has not violated the Secretary's opinion. This, he said, is contrary to Supreme Court decisions and is inconsistent with common law.

National-American Wholesale Grocers' Association, represented by Francis L. Whitmarsh, declared it is unfortunate to repeal the present law and all of its interpretive court decisions, and believes that the abuses complained of should be corrected by amendment to the old law.

New Provisions Impractical

William F. Heide and Dr. Stroud Jordan, representing National Confectioners' Association, expressed sympathy with the objectives of the bill, but showed where in its present form it would work hardship on the confectionery industry because of impractical provisions to which it would be impossible to conform. Such a provision, stated Dr. Jordan, is Sec. 7 (f) (labeling), and he exhibited a 5-lb. jar of assorted hard candies, showing that there would not be space enough on the jar for listing of all of the ingredients in the assortment.

Dr. Jordan also objected to the disclosure of secret processes to inspectors who might unintentionally pass them on to competitors by word of mouth. Exception was taken also to the liability section (Sec. 24), and to Sec. 21, permitting publicity in advance of trial or hearing.

H. B. Thompson, general attorney for the Proprietary Association, furnished some merriment by stating that the genesis of the bill could be found only in the trial for the theft of the tarts in the book "Alice in Wonderland," where the queen demanded a verdict first and a trial afterward.

Charles M. Cox, representing

A Senate hearing holds the attention of the spectators like a drama of the first rank. The actors are not confined to the witnesses.

Acme

When Is Food a "Food"?

- It is important that food manufacturers know the existing advisory definitions of identity and standards of quality for foods and study them in relation to their business.
- Under Sec. 11 of the Tugwell Bill (S. 1934) these specification may become obligatory as the law of the land with such changes as the Secretary may announce from time to time after a 30-day notice and a public hearing. Consumer organizations are being requested by the Food Standards Committee of the Food and Drug Administration to study them and to make comment from the consumer point of view.
- Familiarize yourself with them, make your recommendations to the Food Standards Committee of the Department of Agriculture, and be prepared, if necessary, to attend the public hearings and take a hand in formulating definitions and standards for the foods you manufacture.
- In this (pp. 26-28) and the next few issues these definitions will be published in full.

American Feed Manufacturers' Association, objected to Sec. 7 (f) calling for labeling of ingredients in order of predominance by weight, because of the interchangeability of ingredients in animal feeds and because it is impossible to produce a standardized feed suitable for all parts of the country. The latter is due to differences in the available roughage in the different areas. He believed that a complete divorce of regulations covering human foods from those covering animal feeds would produce more sensible regulations.

The problems of the producers of fresh fruits and vegetables were set forth by Samuel Frazier, of the American Apple Association. He wanted a separate food law. Sec. 24, dealing with liability, is wholly objectionable and proposals regarding fill of containers should exclude fresh nuts and vegetables.

Dr. George W. Hoover, for many years with the Food and Drug Administration, but now a consulting chemist, proposed recognition of the difference between minor violations and the really serious violations, and asked for notice and hearings before applying the punitive features of the act.

Donald J. Burke, of George H. Lee Co. of Omaha, himself a lawyer, declared the procedure for enforcement of the present law is both costly and inefficient, that the bill did not improve the conditions, and proposed an entirely new legal procedure based on Federal Trade Commission methods, which he believed would clean up 75 per cent of the cases brought by the Food and Drug Administration without recourse to court action.

Bill Is Not Anti-N.R.A.

S. 1944 is anti-N.R.A. was the charge made by Roy B. Schlotterer, representing the New York Board of Trade, but Senator Copeland later called in representatives of N.R.A.'s Consumers Advisory Board and the U.S. Department of Labor, who refuted his allegation.

Flavoring Extract Manufacturers' Association and the National Association of Fruit and Flavoring Syrup Manufacturers, represented by John S. Hall, said the bill suggests abandonment of the regulatory measures of known and salutary effects. He opposed the broad interpretive powers of the bill and cited constitutional decisions to support his arguments.

William H. Raye, of General Foods Co., filed appearance by a letter calling attention to the possibility of excluding natural foods—*e.g.*, shellfish—through the application of tolerances which are so rigid that certain metallic substances normally present in them would be declared adulteration in the meaning of the bill.

Desire for a court of appeal from decisions of the Secretary of Agriculture similar to the Court of Customs Appeal was expressed on behalf of the American Spice Trade Association in a long list of objections. Other demands include a request for privilege of reconditioning imported products and also advance approval of labels and exemption from formula disclosures required under the bill.

A severe denunciation of the bill came from C. C. Parlin, of Curtis Publishing Co., spokesman for National Periodical Publishers and the National Publishers' Association. He was very positive in his belief that Secs. 9, 11, 21 and 22, taken in conjunction with implications under Secs. 17 and 18, will have the effect of bankrupting all publishers, and declared that it constitutes one of the most vicious legislative attempts ever made. The bill will kill all advertising and thereby seriously injure many a food manufacturer.

American Association of Advertising Agencies, through John Benson, president, declared Sec. 9 (b) (1), dealing with drug advertising, should be cut out entirely, because "faint praise will damn anything."

The spokesman for the National Canners' Association, Frank Gerber, expressed "full sympathy with the purposes of the Department of Agriculture in its efforts" to correct the faults of the act of 1906. Sec. 11, he said, should be amended to incorporate the provisions of the McNary-Mapes Amendment to the present law, but he also stressed the difficulty of determination of quality grades, and suggested that in the association there was but a small proportion of members who believed that Bureau of Agricultural economic standards are equally applicable in a criminal statute. He also proposed an additional section for the bill to provide access to the books of a manufacturer in cases where it is necessary.

Many other speakers filed briefs both with and without short oral presentations.

The hearing closed with a brief speech by Prof. David S. Cavers, co-author of S. 1944 (see FOOD INDUSTRIES, December, 1933, p. 489). He disclaimed any effort at rebuttal, yet commented on the "many misconstructions" presented at this hearing, and questioned whether the proposals to insert adverbs, such as "materially," "inherently," "reasonable," are constructive additions to the bill. He deplored the tendency of the industries to exaggerate the dangers of grants of power, and declared that in order to set up standards (Sec. 11), there is no way other than by administrative action. He failed, however, to make any mention of the legal philosophy of the bill as brought out by Charles Wesley Dunn, who stated that it requires the accused to prove his own innocence, or the complaints about Sec. 7 (misbranding).

Hearings on the House bills, H. 6110, 6111, 6118, introduced by Representative Sirovich, will begin on Jan. 5, 1934, according to the latest information available.

Definitions AND *Standards*

The following definitions and standards for food products have been adopted as a guide for the officials of this department in enforcing the food and drugs act. These definitions and standards include those published in S. R. A., F. D. 2, revision 3, and those adopted May 12, 1933.

HENRY A. WALLACE, *Secretary of Agriculture,*
WASHINGTON, D. C., Aug. 1, 1933.

THESE DEFINITIONS are so framed as to exclude substances not mentioned in the definition and in each instance imply that the product is clean and sound.

1. ANIMAL PRODUCTS

A. Meats and the Principal Meat Products

a. MEATS

1. Flesh is any edible part of the striated muscle of an animal. The term "animal," as herein used, indicates a mammal, a fowl, a fish, a crustacean, a mollusk, or any other animal used as a source of food.

2. Meat[1] is the properly dressed flesh derived from cattle, from swine, from sheep, or from goats sufficiently mature and in good health at the time of slaughter, but is restricted to that part of the striated muscle which is skeletal or that which is found in the tongue, in the diaphragm, in the heart, or in the esophagus, and does not include that found in the lips, in the snout, or in the ears, with or without the accompanying and overlying fat, and the portions of bone, skin, sinew, nerve, and blood vessels which normally accompany the flesh and which may not have been separated from it in the process of dressing it for sale.

3. Fresh meat is meat which has undergone no substantial change in character since the time of slaughter.

4. Beef is meat derived from cattle nearly 1 year of age or older.

5. Veal is meat derived from young cattle 1 year or less of age.[2]

6. Mutton is meat derived from sheep nearly 1 year of age or older.

7. Lamb is meat derived from young sheep 1 year or less of age.[2]

8. Pork is meat derived from swine.

9. Venison is flesh derived from deer.

b. MEAT BYPRODUCTS

Meat byproducts are any properly dressed edible parts, other than meat, which have been derived from one or more carcasses of cattle, of swine, of sheep, or of goats sufficiently mature and in good health at the time of slaughter.

c. PREPARED MEATS

1. Prepared meat is the product obtained by subjecting meat to a process of comminuting, of drying, of curing, of smoking, of cooking, of seasoning, or of flavoring, or to any combination of such processes.

2. Cured meat is the product obtained by subjecting meat to a process of salting, by the employment of dry common salt or of brine, with or without the use of one or more of the following: sodium nitrite, sodium nitrate, potassium nitrate, sugar, dextrose, a syrup, honey, spice.

3. Dry salt meat is the prepared meat which has been cured by the application of dry common salt, with or without the use of one or more of the following: sodium nitrite, sodium nitrate, potassium nitrate, sugar, dextrose, a syrup, honey, spice; with or without the injection into it of a solution of common salt to which may have been added one or more of the following: sodium nitrite, sodium nitrate, potassium nitrate, sugar, dextrose, a syrup, honey.

4. Corned meat is the prepared meat which has been cured by soaking in, with or without injecting into it, a solution of common salt, with or without one or more of the following, each in its proper proportion: sodium nitrite, sodium nitrate, potassium nitrate, sugar, dextrose, a syrup, honey, and with or without the use of spice.

5. Sweet pickled meat is the prepared meat which has been cured by soaking in, with or without injecting into it, a solution of common salt, with sugar and/or dextrose, a syrup, and/or honey, together with one or more of the following, each in its proper proportion: sodium nitrite, sodium nitrate, potassium nitrate, and with or without the use of spice.

6. Dried meat is the product obtained by subjecting fresh meat or cured meat to a process of drying, with or without the aid of artificial heat, until a substantial portion of the water has been removed.

7. Smoked meat is the product obtained by subjecting fresh meat, dried meat, or cured meat to the direct action of the smoke either of burning wood or of similar burning material.

8. Canned meat is fresh meat or prepared meat, packed in hermetically sealed containers, with or without subsequent heating for the purpose of sterilization.

9. Hamburg steak, "Hamburger steak," is comminuted fresh beef, with or without addition of suet and/or of seasoning.

10. Potted meat, deviled meat, is the product obtained by comminuting and cooking fresh meat and/or prepared meat, with or without spice, and is usually packed in hermetically sealed containers.

11. Sausage meat is fresh meat or prepared meat, or a mixture of fresh meat and prepared meat, and is sometimes comminuted. The term "sausage meat" is sometimes applied to bulk sausage containing no meat byproducts.

d. MEAT FOOD PRODUCTS

1. Meat food products are any articles of food or any articles that enter into the composition of food which are not prepared meats but which

*Revision 4, Service and Regulatory Announcements, Food and Drug, No. 2, issued August, 1933, by Food and Drug Administration, United States Department of Agriculture.

[1]The term "meat" when used in a qualified form, as, for example, "horse meat," "reindeer meat," "crab meat," etc., is then, and then only, properly applied to corresponding portions of animals other than cattle, swine, sheep, and goats.

[2]Minimum limits governing the age or the weight or both of these have been fixed by certain states and municipalities in the case of calves and lambs to be slaughtered for meat.

..... FOOD Products*

are derived or prepared, in whole or in part, by a process of manufacture from any portion of the carcasses of cattle, swine, sheep, or goats, if such manufactured portion be all, or a considerable and definite portion, of the article, except such preparations as are for medicinal purposes only.

2. Meat loaf is the product consisting of a mixture of comminuted meat with spice and/or with cereals, with or without milk and/or eggs, pressed into the form of a loaf and cooked.

3. Pork sausage is chopped or ground fresh pork, with or without one or more of the following: herbs, spice, common salt, sugar, dextrose, a syrup, water.

4. Brawn is the product made from chopped or ground and cooked edible parts of swine, chiefly from the head, feet. and/or legs, with or without the chopped or ground tongue.

5. Headcheese, mock brawn, differs from brawn in that other meat and/or meat byproducts are substituted, in whole or in part, for corresponding parts derived from swine.

6. Souse is the product consisting of meat and/or meat byproducts; after cooking, the mixture is commonly packed into containers and covered with vinegar.

7. Scrapple is the product consisting of meat and/or meat byproducts mixed with meal or the flour of grain, and cooked with seasoning materials, after which it is poured into a mold.

e. LARD

1. Lard is the rendered fresh fat from hogs in good health at the time of slaughter, is free from rancidity, and contains, necessarily incorporated in the process of rendering, not more than 1 per cent of substances other than fatty acids and fat.

2. Leaf lard is lard rendered at moderately high temperatures from the internal fat of the abdomen of the hog, excluding that adherent to the intestines, and has an iodine number not greater than 60.

3. Neutral lard is lard rendered at low temperatures.

●

B. Milk and Milk Products

a. MILKS

1. Milk is the whole, fresh lacteal secretion obtained by the complete milking of one or more healthy cows, excluding that obtained within 15 days before and 5 days after calving, or such longer period as may be necessary to render the milk practically colostrum free. The name "milk" unqualified means cow's milk

2. Pasteurized milk is milk every particle of which has been subjected to a temperature not lower than 142 deg. F. for not less than 30 minutes and then promptly cooled to 50 deg. F. or lower.

3. Homogenized milk is milk that has been mechanically treated in such a manner as to alter its physical properties, with particular reference to the condition and appearance of the fat globules.

4. Evaporated milk is the product resulting from the evaporation of a considerable portion of the water from milk, or from milk with adjustment, if necessary, of the ratio of fat to non-fat solids by the addition or by the abstraction of cream. It contains not less than 7.8 per cent of milk fat, nor less than 25.5 per cent of total milk solids; provided, however, that the sum of the percentages of milk fat and total milk solids be not less than 33.7.

5. Sweetened condensed milk is the product resulting from the evaporation of a considerable portion of the water from milk to which sugar and/or dextrose has been added. It contains not less than 28 per cent of total milk solids, and not less than 8 per cent of milk fat.

6. Dried milk is the product resulting from the removal of water from milk, and contains not less than 26 per cent of milk fat and not more than 5 per cent of moisture.

7. Malted milk is the product made by combining whole milk with the liquid separated from a mash of ground barley malt and wheat flour, with or without the addition of sodium chloride, sodium bicarbonate, and potassium bicarbonate, in such a manner as to secure the full enzymic action of the malt extract, and by removing water. The resulting product contains not less than 7.5 per cent of butter fat and not more than 3.5 per cent of moisture.

8. Goat's milk and ewe's milk are the whole, fresh lacteal secretions free from colostrum obtained by the complete milking of the healthy animals, and conform in name to the species of animal from which they are obtained.

b. SKIM MILKS

9. Skim milk, skimmed milk, is that portion of milk which remains after removal of the cream in whole or in part.

10. Evaporated skimmed milk is the product resulting from the evaporation of a considerable portion of the water from skimmed milk, and contains not less than 20 per cent of milk solids.

11. Sweetened condensed skimmed milk is the product resulting from the evaporation of a considerable portion of the water from skimmed milk to which sugar and/or dextrose has been added. It contains not less than 24 per cent of milk solids.

12. Dried skimmed milk is the product resulting from the removal of water from skimmed milk, and contains not more than 5 per cent of moisture.

13. Buttermilk is the product that remains when fat is removed from milk or cream, sweet or sour, in the process of churning. It contain not less than 8.5 per cent of milk solids not fat.

14. Cultured buttermilk is the product obtained by souring pasteurized skimmed or partially skimmed milk by means of a suitable culture of lactic bacteria. It contains not less than 8.5 per cent of milk solids not fat.

c. CREAM

1. Cream, sweet cream, is that portion of milk, rich in milk fat, which rises to the surface of milk on standing or is separated from it by centrifugal force. It contains not less than 18 per cent of milk fat and not more than 0.2 per cent of acid-reacting substances, calculated in terms of lactic acid.

2. Whipping cream is cream which contains not less than 30 per cent of milk fat.

3. Homogenized cream is cream that has been mechanically treated in such a manner as to alter its physical properties, with particular reference to the condition and appearance of the fat globules.

d. MILK FAT OR BUTTER FAT

Milk fat, butter fat, is the fat of milk.

e. BUTTER

Butter is the food product usually known as butter, and which is made exclusively from milk or cream, or both, with or without common salt, and with or without additional coloring matter, and contains not less than 80 per cent by weight of milk fat, all tolerances having been allowed for.[3]

f. CHEESE

1. Cheese is the product made from curd obtained from the whole, partly skimmed, or skimmed milk of cows, or from the milk of other animals, with or

[3]In conformity with act of Congress approved March 4, 1923.

without added cream, by coagulating the casein with rennet, lactic acid, or other suitable enzyme or acid, and with or without further treatment of the separated curd by heat or pressure, or by means of ripening ferments, special molds, or seasoning.

In the United States the name "cheese," unqualified, is understood to mean Cheddar cheese, American cheese, American Cheddar cheese.

2. Whole milk cheese is cheese made from whole milk.

3. Partly skimmed milk cheese is cheese made from partly skimmed milk.

4. Skimmed-milk cheese is cheese made from skimmed milk.

WHOLE MILK CHEESE

5. Cheddar cheese, American cheese, American Cheddar cheese, is the cheese made by the Cheddar process from heated and pressed curd obtained by the action of rennet on whole milk. It contains not more than 39 per cent of water, and, in the water-free substance, not less than 50 per cent of milk fat.

6. Pineapple cheese is the cheese made by the pineapple Cheddar cheese process from pressed curd obtained by the action of rennet on whole milk. The curd is formed into a shape resembling a pineapple, with characteristic surface corrugations, and during the ripening period the cheese is thoroughly coated and rubbed with a suitable oil, with or without shellac. It contains, in the water-free substance, not less than 50 per cent of milk fat.

7. Limburger cheese is the cheese made by the Limburger process from unpressed curd obtained by the action of rennet on whole milk. The curd is ripened in a damp atmosphere by special fermentation. It contains, in the water-free substance, not less than 50 per cent of milk fat.

8. Brick cheese is the quick-ripened cheese made by the brick-cheese process from pressed curd obtained by the action of rennet on whole milk. It contains, in the water-free substance, not less than 50 per cent of milk fat.

9. Stilton cheese is the cheese made by the Stilton process from unpressed curd obtained by the action of rennet on whole milk, with or without added cream. During the ripening process a special blue-green mold develops, and the cheese thus acquires a marbled or mottled appearance in section.

10. Gouda cheese is the cheese made by the Gouda process from heated and pressed curd obtained by the action of rennet on whole milk. The rind is colored with saffron. It contains, in the water-free substance, not less than 45 per cent of milk fat.

11. Neufchatel cheese is the cheese made by the Neufchatel process from unheated curd obtained by the combined action of lactic fermentation and rennet on whole milk. The curd, drained by gravity and light pressure, is kneaded or worked into a butterlike consistence and pressed into forms for immediate consumption or for ripening. It contains, in the water-free substance, not less than 50 per cent of milk fat.

12. Cream cheese is the unripened cheese made by the Neufchatel process from whole milk enriched with cream. It contains, in the water-free substance, not less than 65 per cent of milk fat.

13. Roquefort cheese is the cheese made by the Roquefort process from unheated unpressed curd obtained by the action of rennet on the whole milk of sheep, with or without the addition of a small proportion of the milk of goats. The curd is inoculated with a special mold (*Penicillium roqueforti*) and ripens with the growth of the mold. The fully ripened cheese is friable and has a mottled or marbled appearance in section.

14. Gorgonzola cheese is the cheese made by the Gorgonzola process from curd obtained by the action of rennet on whole milk. The cheese ripens in a cool, moist atmosphere with the development of a blue-green mold and thus acquires a mottled or marbled appearance in section.

WHOLE MILK OR PARTLY SKIMMED MILK CHEESE

15. Edam cheese is the cheese made by the Edam process from heated and pressed curd obtained by the action of rennet on whole milk or on partly skimmed milk. It is commonly made in spherical form and coated with a suitable oil and a harmless red coloring matter.

16. Emmenthaler cheese, Swiss cheese, is the cheese made by the Emmenthaler process from heated and pressed curd obtained by the action of rennet on whole milk or on partly skimmed milk, and is ripened by special gas-producing bacteria, causing characteristic "eyes" or holes. The cheese is also known in the United States as "Schweizer." It contains, in the water-free substance, not less than 45 per cent of milk fat.

17. Camembert cheese is the cheese made by the Camembert process from unheated unpressed curd obtained by the action of rennet on whole milk or on slightly skimmed milk, and ripens with the growth of a special mold (*Penicillium camemberti*) on the outer surface. It contains, in the water-free substance, not less than 45 per cent of milk fat.

18. Brie cheese is the cheese made by the Brie process from unheated unpressed curd obtained by the action of rennet on whole milk, on milk with added cream, or on slightly skimmed milk, and ripens with the growth of a special mold on the outer surface.

19. Parmesan cheese is the cheese made by the Parmesan process from heated and hard-pressed curd obtained by the action of rennet on partly skimmed milk. The cheese, during the long ripening process, is coated with a suitable oil.

SKIMMED MILK CHEESE

20. Cottage cheese, Schmierkase, is the unripened cheese made from unheated (or scalded) curd obtained by the action of lactic fermentation or lactic acid or rennet, or by any combination of these agents, on skimmed milk, with or without the addition of buttermilk. The drained curd is sometimes mixed with cream, salted and sometimes otherwise seasoned.

WHEY CHEESE

21. Whey cheese (so-called) is produced by various processes from the constituents of whey. There are a number of varieties, each of which bears a distinctive name, according to the nature of the process by which it has been produced, as, for example, "Ricotta," "Zieger," "Primost," "Mysost."

PASTEURIZED CHEESE AND EMULSIFIED CHEESE

22. Pasteurized cheese, pasteurized-blended cheese, is the pasteurized product made by comminuting and mixing, with the aid of heat and water, one or more lots of cheese into a homogeneous, plastic mass. The name "pasteurized cheese," "pasteurized-blended cheese," unqualified, is understood to mean pasteurized Cheddar cheese, pasteurized-blended Cheddar cheese, and applies to a product which conforms to the standard for Cheddar cheese. Pasteurized cheese, pasteurized-blended cheese, bearing a varietal name, is made from cheese of the variety indicated by the name and conforms to the limits for fat and moisture for cheese of that variety.

23. Emulsified cheese, "process cheese," is the modified cheese made by comminuting and mixing one or more lots of cheese into a homogeneous, plastic mass, with the aid of heat, with or without the addition of water, and with the incorporation of not more than 3 per cent of a suitable emulsifying agent. The name "emulsified cheese," "process cheese," unqualified, is understood to mean emulsified Cheddar cheese, process Cheddar cheese, and applies to a product which contains not more than 40 per cent of water and, in the water-free substance, not less than 50 per cent of milk fat. Emulsified cheese, process cheese, qualified by a varietal name, is made from cheese of the variety indicated by the name, and conforms to the limits for fat and moisture for cheese of that variety.

g. WHEY

Whey is the product remaining after the removal of fat and casein from milk in the process of cheese making.

Violent Upheaval in A.A.A.

Clash of Ideals and Policies Leads to Three-Cornered Conflict

WITH THE REMOVAL of George N. Peek as administrator, and appointment of Chester C. Davis, former chief of the Production Control Division, in his stead, the shake-up in A.A.A. has just begun. Nowhere else is conjecture more lively than in A.A.A. offices and it is likely that Congress will take a hand if reorganization does not proceed soon. The conflict in A.A.A. was not simply a struggle between left and right wings, as supposed. Wallace, Peek and Tugwell were all at odds and there is no evidence at this writing (Dec. 18) that Wallace and Tugwell have patched things up.

Peek, in the first instance, desired to set up A.A.A. as a unit independent of the Department of Agriculture. His ambition was to head up an organization similar to General Johnson's N.R.A. Disappointed on that score, Peek differed with his chief on fundamental policy by advocating price fixing rather than production control as a means of improving the farmers' lot. He clashed with Tugwell and Fred C. Howe, consumers' counsel, in their attempt to use codes and marketing agreements to squeeze food processors and distributors. Conservative Mr. Peek contended that such instruments should be confined to the elimination of sharp competitive practices and establishment of self-government of the food industries on a basis on which it had a chance to succeed. Secretary Wallace also objects to Tugwell's view on socialization of the food industries and is apprehensive that the young professor's autocratic attitude will discredit A.A.A.

Until the President's executive order is published and a definition given as to what constitutes "first processing," it is not absolutely certain how many of the food industries will remain subject to A.A.A.'s jurisdiction. Milling, slaughtering and canning certainly would seem to be elected, but others doubtless will be included if the President accepts the recommendation of Jerome N. Frank, A.A.A.'s general counsel and one of the leaders in the left wing. The liberals, otherwise, are in the humiliating position of having routed their opposition only to find that he has carried off their ammunition. Even so, the primary processing industries, which are in entire accord with Wallace's desire to curtail farm production, remain exposed to abuse by Assistant Secretary Tugwell. As Secretary Wallace needs the cooperation of these industries, an open break with Tugwell is regarded as inevitable.

Resignation of Peek Has Not Simplified Problems of Food Manufacturers

Tugwell Still Going Strong

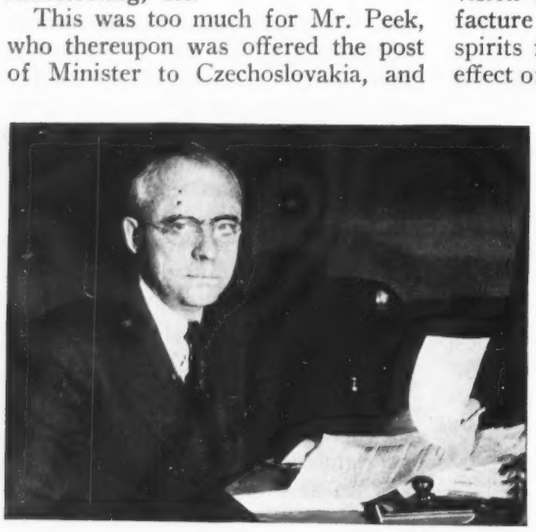
On date of writing, President Roosevelt had not yet called off Prof. Tugwell. There were some who believed he would be permitted to remain until Congress has acted on his pet proposal, the new food and drug bill. The opposition that Tugwell's handling of that measure has stirred up may persuade the President, however, that the young pundit has outlived his usefulness. Tugwell's removal might be good strategy, as it would take the wind out of the sails of the opposition. The fact is that the Administration wants legislation to fortify the present law and the food industries have been more incensed by Prof. Tugwell's tactics than by the legislation, which they accept in principle, but object to if its enforcement is put in the hands of a bureaucrat with wide arbitrary and discretionary authority.

Food industries now out from under the A.A.A. will, at least, have an opportunity to write their own codes in the first instance. A.A.A.'s "model" demanded that the industry accept code authorities appointed by the Secretary of Agriculture, that trade practice rules embody the provisions of the food and drug bill and that the Secretary of Agriculture have access at any time to manufacturers' books. Under N.R.A. Division Administrator Whiteside's direction, codes transferred from A.A.A. now are being revamped to conform with General Johnson's idea of industrial self-discipline, rather than the A.A.A. doctrine of socializing business by subordinating the profit motive. This is not to say that N.R.A. will not insist upon provisions that will assure a thorough clean-up of competitive abuses and establish fair labor conditions. But only an industry-appointed code authority will have the right of access to books, and then only in response to bona-fide complaint against a member of the industry and to the extent necessary for evidence. The food and drug bill will not be written into the codes but an alternative provision inserted providing that all label and standard requirements prescribed under the law shall be complied with by the manufacturer. Provisions with respect to mark-up will conform to those of the N.R.A. wholesale and retail codes, to which A.A.A. objected.

Under Administrator Davis the A.A.A. will put renewed emphasis on production control and it is expected that marketing agreements will be confined to this objective. Secretary Wallace has been skeptical concerning the effectiveness of marketing agreements to raise the farmers' income by price fixing. It was on this issue with Mr. Peek that milk was spilled. Asked at a press conference whether the A.A.A. would consider lowering the price to producers of milk in order to make it cheaper to the consumer, Mr. Peek asserted that he "never heard of a case where the farmer was getting too much." Secretary Wallace countered by remarking that the question deserved a more detailed answer.

Because of the relatively high prices of milk enforced by marketing agreements, the milk producers, said Mr. Wallace, are ahead of the procession and "that is a position that cannot indefinitely be held by agreement or anything of that sort. We hope that the rest of the procession will be up to them before the agreements give way," but, he declared, "the result is to divert a considerable percentage of the milk produced in the local milkshed into butter, which increases the butter surplus, and also to bring about various kinds of pressure—racketeering, etc."

This was too much for Mr. Peek, who thereupon was offered the post of Minister to Czechoslovakia, and later, through one of those inspirations that comes to President Roosevelt in moments of crisis, the position of export trade promoter. In that job, Mr. Peek has an opportunity to render a real service to agriculture. Disposal of farm surpluses is still a riddle, despite acreage reduction and the destruction of crops. With the repeal of prohibition, bargaining with foreign countries for reciprocal trade assumes a very practical aspect. The deficiency in the domestic supply of liquor offers a chance to create or restore, at least temporarily, foreign markets for the staple crops. Beyond such international bargaining and the competitive advantage given to American products by the cheap dollar, there is little that the Administration can do to increase export outlets. With the high costs entailed by its recovery program, the Administration has made the choice between two lines of policy, so simply stated recently by Secretary Wallace: either to modify its tariff policy so as to permit a larger quantity and value of imports to enter the country, or accept a considerable and permanent loss of its foreign markets.



CHESTER C. DAVIS

Director of the Production Division of A.A.A. since its organization last May, Mr. Davis succeeds George N. Peek, resigned, as Agricultural Adjustment Administrator.

A code and marketing agreement for distillers and codes for rectifiers of distilled spirits, liquor wholesalers, importers and brewers had the right-of-way through A.A.A. during the past month, although most of the work was done by the President's special interdepartmental committee on control of alcohol and alcoholic beverages. The distillers' marketing agreement pledges them to manufacture distilled spirits exclusively from cereal grains, except under special permits from the Secretary of Agriculture. This provision does not apply to the manufacture of rum, brandy or brandy spirits for fortification of wine. The effect of this provision is to guarantee to grain growers the full market for grain to be made into whisky and 90 per cent of the market, as soon as grain distilleries can be put into operation, for ethyl alcohol to be used for rectification and blending. It is estimated that 30,000,000 to 35,000,000 bu. of corn and rye will be consumed within the next year in the manufacture of whisky and beverage alcohol. The distillers will pay the parity price by buying the grain at the market, paying any processing tax thereon to the government and also such differential as will bring the total price paid up to parity. A marketing agreement and license for California olive canners became effective Dec. 13. The agreement sets up minimum prices to be paid producers for the 1933 crop and the minimum prices to distributors.

The California cling peach marketing agreement has been amended to increase maximum and minimum prices, effective after Jan. 1, by 10c. per dozen cans of No. 2½ choice, with comparable increases for other grades and sizes. The new price list carries a provision requiring canners to pay 25 per cent of the amount of the increase into a fund to be distributed pro rata to all growers of No. 1 fruit. The price guarantee provision of the license has been modified to extend from Dec. 21 to July 31 next the guarantee against declines on unshipped orders, goods in transit and unsold floor stocks.

Amendments have been made to the southern rice milling marketing agreement broadening the definition of "millers" to include exporters of rough rice, requiring a seller other than the grower to submit evidence that the grower received not less than the minimum price prevailing at the time he sold the rice, and making replacement cost the basis for all sales, instead of either replacement cost or actual cost, as orginally provided.

The processing tax on field corn remained at 5 cents per bushel, the rate effective since its imposition, Nov. 5, instead of going to 20 cents a bushel Nov. 30, as originally provided. The low rate was retained to prevent accumulation of surplus stocks and depression in the farm price of corn.

Reequipping for Triple Capacity

(Concluded from page 7)

penses mount and the plant is likely to become unsightly in appearance and probably unsanitary in fact. Throughout this plant, the walls in the processing rooms have been tiled and covered with a durable white paint. The floors have been set with Drehmann floor brick, laid so that all drainage is away from the walls and corners to centrally located drains. The exteriors of the storage tanks, pasteurizer holders, and other rust-susceptible equipment have been covered with moisture- and air-resisting white lacquer. Throughout the plant there is an abundance of rubber hose attached to steam and water lines for cleaning and sterilizing purposes.

Acknowledgment is made to A. J. Vroman, chief engineer, and to R. R. Gockley, R. M. Mason and T. W. Greenway, of the production department, Dairymen's League Cooperative Association, Inc., for the opportunity to study the changes made in this plant and to obtain information upon which these articles are based.

SAVING GASOLINE . . . *by Automatically Shutting off Truck Engine . . . Device Functions After Stops Over 3 Minutes Long*

FLEET OWNERS desiring to economize on gasoline used in their truck engines have long sought some means of automatically shutting off the engine during stops of moderate length. Before self-starters became universal, drivers would not obey instructions to shut off their engines except during long loading stops or lunch periods, because it meant more physical work in cranking the engines to start them after each stop. Even with self-starters, drivers who are careless do not follow such orders.

Therefore fleet owners should find much of interest in a new device called the Aero-Bus Setstop, because it is designed to shut off an idling engine automatically after any predetermined period of time. It is particularly well adapted for use on multi-stop operations in the food field, such as milk and bread routes.

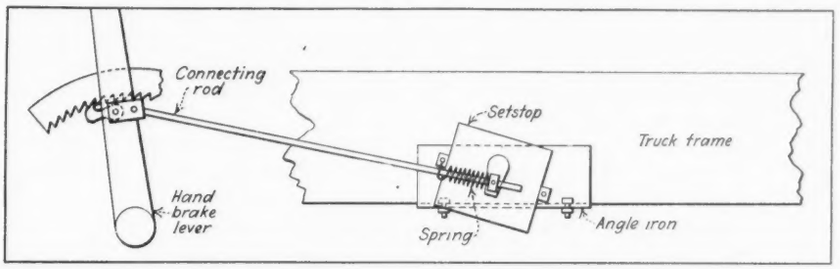
The device is made by the General Auto Electric Co., 239 East 149th St., New York, N. Y., and may be fitted to any make of truck or passenger car. The instrument, which is pictured in the accompanying illustrations, consists of a clocklike mechanism and a circuit breaker mounted in a waterproof rectangular metal box connected by means of an angle iron to the lower flange of the vehicle frame at a convenient location, depending upon the make of the vehicle. Wires carried in a conduit extend from the top of the box to some point in the engine ignition circuit. A short shaft connected with the clock mechanism extends from the side of the box and carries a lever, which is connected with the brake lever by a rod and spring.

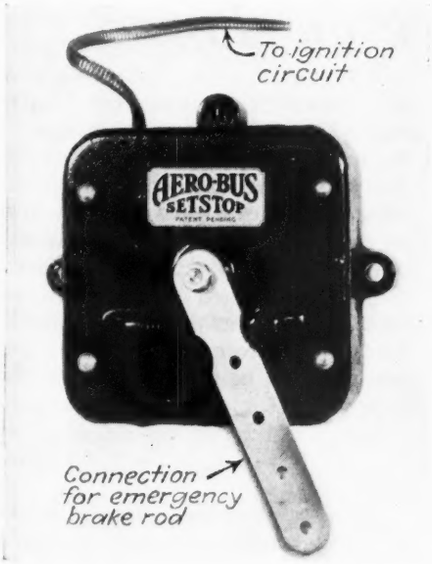
When the driver puts on the emergency brake to keep the truck from rolling after it is stopped, the rod from the brake lever to the Setstop sets in operation its clock mechanism so that at the end of a predetermined period, which usually is 3 minutes, the ignition circuit is broken and the engine stops. The reverse action, when the brake is released, winds up the clock mechanism ready for the next operation.

New Truck Red Book And Directory

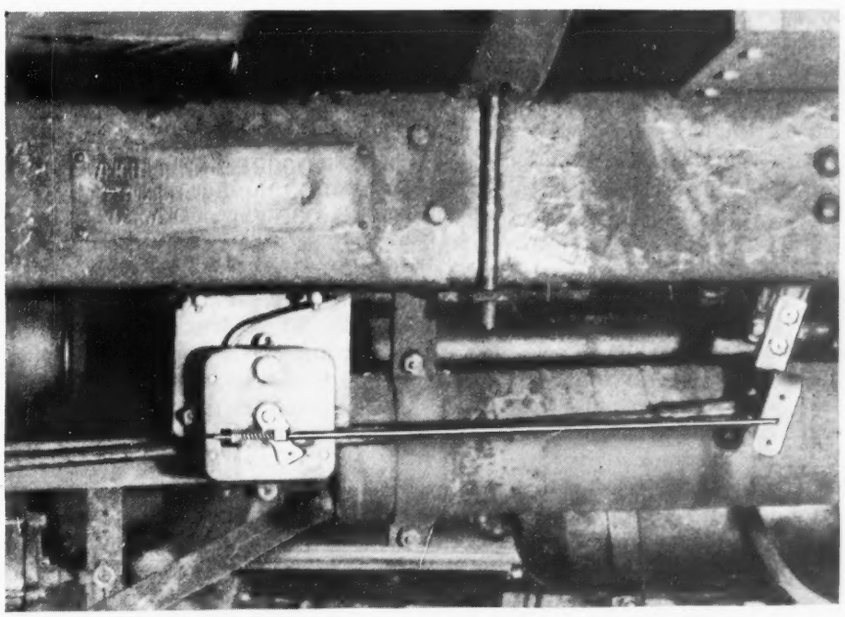
THOSE executives in the food field who are responsible for motor-truck purchase and operation or who ship by truck will find much of value in the Motor Truck Red Book and Directory, published by the Traffic Publishing Co., 100 Sixth Ave., New York, N. Y., at $10.

It is a 725-page encyclopedia of the laws, rules, regulations, principles and practices of motor-truck transportation, with a national directory of motor-truck carriers.

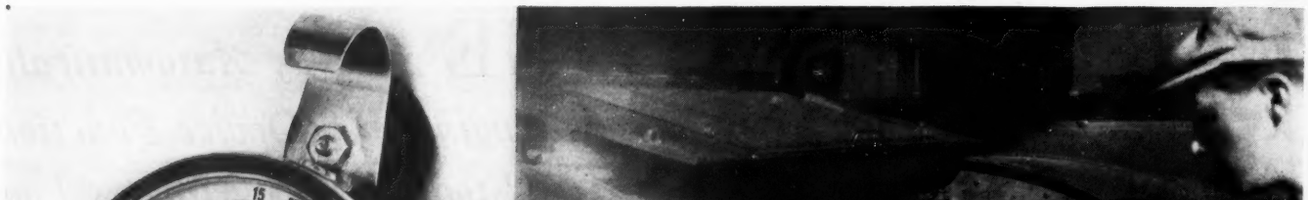




1. Close-up of the Aero-Bus Setstop, which automatically shuts off an idling truck engine after a predetermined period of time.



2. Top, diagrammatic sketch showing how the instrument is connected up with the hand or emergency brake lever on a White truck. Directly above, the device as actually applied to a Borden Co. retail milk route truck.



Close-up of the Allen vacuum tester is shown at the left. At the right, the instrument is seen in actual use by a fleet owner in the food field for quickly and accurately tuning up a truck engine.

Tuning Engines by Vacuum Gage

Allen Tester Also Checks Fuel Pump and Line

A FLEET OPERATOR in the food field, M. Augenblick & Bro., Inc., dealing in butter, eggs, poultry, cheese and allied products in Newark, N. J., has found the Allen vacuum tester a valuable time-saving instrument in maintaining its seventeen trucks. The tester locates engine troubles and indicates their sources. A partial list of the indications made by the device includes sticky valves, leaky valves, weak valve springs, leaky intake gasket, choked muffler, loose valve guides, leaky head gasket, spark-plug gaps too close, valve tappets out of adjustment, incorrect valve or ignition timing, improper carburetor adjustment, troubles in the fuel pump or line, and trouble in the vacuum tank.

While it is acknowledged that all of these troubles may be located by the usual manual means, the Augenblick shop mechanic has found that they can be detected much more easily and quickly by the Allen vacuum tester. The instrument is made by the Allen Electric & Equipment Co., Kalamazoo, Mich., and the G-2 model illustrated herewith lists at $7.50.

The gage has a 3½-in. face with a vacuum dial calibrated from zero to 30 in. with 1 in. division. Colored segment markings extend around the dial with brackets and printed notes in the same color to indicate the engine trouble existing when the pointer of the dial fluctuates or comes to rest within the dial segments corresponding to the printed notes. These notes and the large size of the dial face make the instrument easy to read.

Brockway Motorcade Begins At New York on Jan. 3

TO STRESS the economy of planned transportation of industrial and consumer products in present-day highway distribution by means of modern motor-truck equipment, the Brockway Motor Co., Cortland, N. Y., will conduct a motorcade of 25 trucks over the highways and through cities and villages in five states. The equipment will be exhibited in the form of shows in ten Eastern cities, starting with New York City, at the Adirondack Log Cabin Building, 448 Lexington Ave., on Jan. 3, 1934. The other show cities will include Boston, Albany, Newark, Philadelphia, Baltimore, Pittsburgh, Buffalo, Rochester, Syracuse and Cortland, N. Y.

The motorcade and shows will cover, in exhibited models, the sweep of motor-truck engineering, design and operation from the early days of the industry up to the present time. All of the vehicles will be of the latest type except three consisting of an old surrey made by the Brockway company some 40 years ago; a three-cylinder, air-cooled Brockway manufactured 25 years ago and a Brockway truck several years old. The first two will be shown for their historic interest and the third as a comparison between a vehicle no older than 40 per cent of the trucks now on the road.

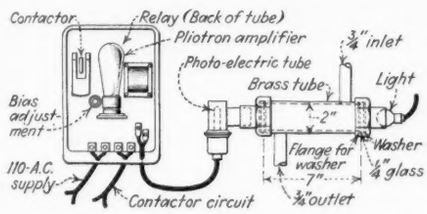
Both gasoline and electric trucks will be included and each will be a complete transportation unit, including various types of bodies, milk tanks, gasoline tanks, semi-trailers and other truck equipment.

IDEAS . . . FROM PRACTICAL MEN

Photo Cell Detects Turbidity

Wherever the turbidity of water is an important factor in plant operation, as it often is where the water is taken from a stream, a photo-electric turbidity detector will prove effective.

A commercial application of such a unit is illustrated in the sketch, this being used in the Denver water supply system. With this arrangement, the water is sampled through a brass tube, the ends of which are closed with glass and through which a light is directed upon a photo-sensitive unit. This particular device was adjusted so that it operated on a turbidity of 100 or more p.p.m., giving a warning signal to the operator when the turbidity reached that point.

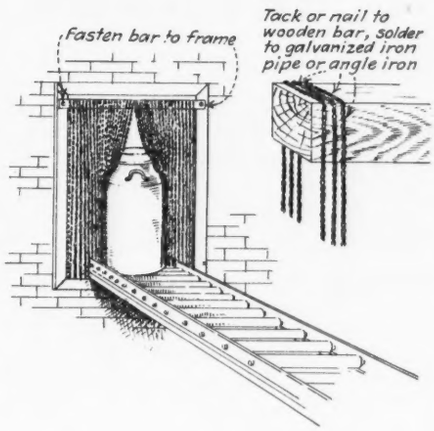


This device may be applied to various control problems where the light transmitting properties of a liquid bear a direct relation to a condition to be controlled.

Chain Screens Keep Out Flies

Most dairy and ice cream plants receive their milk in 10-gal. cans which are conveyed into the building on roller conveyors extending through an opening in the outer wall. And, after being emptied and washed, the cans usually are returned to the truck through another opening.

To keep these openings closed to flies is a necessary sanitary measure. Various flap doors have been devised to do this, but frequently these are



left open. A simple yet effective device for keeping such openings closed at all times may be prepared from common fine-link brass (or other rustproof) chain. Lengths of this chain are fastened, close together, to a metal bar or piece of wood, the chain hanging down on either side to the full length of the opening. This makes a double screen, or curtain.

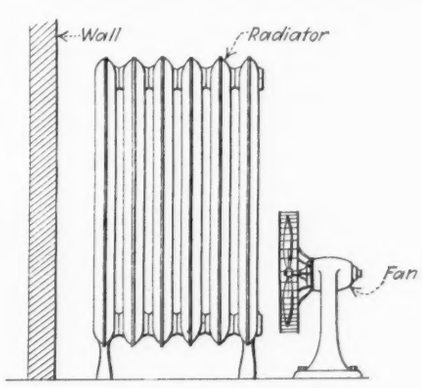
The chain curtain permits passage of cans or other objects on the conveyor, and it has the advantages of brushing flies from the cans and of closing automatically.

Being of rustproof material, the screen can be cleaned easily by turning the water and steam hose on it daily.

HUBERT GARRECHT, *Memphis, Tenn.*

Fan Boosts Heater Capacity

When a heat-exchange unit falls below requirements in capacity, the situation sometimes can be remedied by installing a fan to move the air across the unit at a higher velocity. The capacity of an ordinary radiator can be doubled or tripled by the use of a simple fan, arranged as shown.



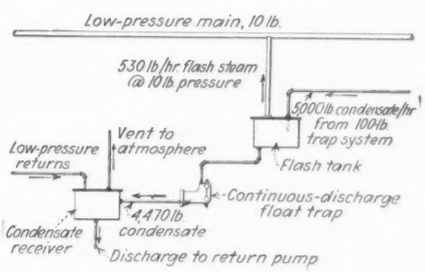
A radiator without a fan is surrounded by a film of dead air, and the rate of heat transmission under this condition amounts to only about 1.5 B.t.u. per square foot per degree F. per hour. When the film of dead air is broken, the rate of transmission increases in proportion to the velocity of the air current, being about 3 B.t.u. per square foot per hour when the velocity of the air has reached 3 ft. per second.

The author operated a shop where the radiator was inadequate except during mild weather. Because of lack of space, additional heating surface could not be installed, so a fan was used. It performed quite successfully.

N. T. PEF, *Chicago, Ill.*

How to Save Flash Steam

When high-pressure steam traps discharge into a receiver vented to the atmosphere, the flash steam is wasted; when they discharge into a vacuum receiver serving a low-pressure system, the flash steam makes it difficult to maintain the vacuum. Cold water sometimes is introduced



into the receivers to minimize or eliminate the flash steam. This, however, causes scaling and sometimes overflows the boiler-room surge tank, wasting heat and water.

Where high-pressure steam is used in processing and low-pressure steam for heating, a substantial saving sometimes can be effected by installing a flash tank in the high-pressure condensate return line and venting this tank to the low-pressure system.

In one installation of this type, shown in the sketch, approximately 10 per cent of the steam originally delivered to the high-pressure process is recovered in the low-pressure main.

S. H. COLEMAN, *Waynesboro, Va.*

Tricks of the Trade

Most production supervisors and plant engineers have "trick" ways of speeding up or making less difficult certain operations in the factory. These come under the classification of practical ideas and are acceptable to FOOD INDUSTRIES for this department. Remuneration starts at $3 for items published. Send them in.

—THE EDITORS

NEW PRODUCTS—

—NEW METHODS

Deletes Vitamin A, Gets D

The antixerophthalmic vitamin A is displaced and the antirachitic vitamin D caused to appear by a chemical process recently patented by August J. Pacini, Chicago, Ill., and assigned to Sun-A-Sured, Inc., of Delaware. The process embodies a displacement of vitamin bodies from one form to another; it is possible that a direct transformation of vitamin A to vitamin D takes place.

The process, effected enzymically, is as follows: Cholesterol in alcoholic solution is poured into water; it precipitates, causing the solution to become opalescent. The cholesterol is now in a condition to be used as a substrate for the preparation of vitamin D. If the suspension is acted on at room temperature by taka-diastase (a preparation representing the diastase extract from *Aspergillus oryzae*), a vitamin believed to be D is formed.

Guaranteed—No Sediment

A new type of non-settling chocolate malt syrup guaranteed not to form a sediment has been developed by Heyman Process Corp., New York, N. Y.

It is made from chocolate by removing the insoluble starch and cellulosic material, the starch being dissolved by its conversion to soluble maltose. Formerly, it was necessary to heat milk containing cocoa to the boiling point and then cool the chocolate milk liquid in the bottles during agitation. With the new syrup, simply stirring the chocolate and milk together is sufficient, even when the milk is cold.

Chocolate Mello syrup is being distributed to dairies in 16-oz. glass jugs for sale to the retail trade or in larger containers for the manufacture of bottled chocolate milk.

"Vitapacked" Chocolate Malt

Modern packaging methods are incorporated in the recently developed container for Malt-o-Egg, packed by Titman Food Products Corp., New York, N. Y. The round, 1-lb. can is "vitapacked," and the metal is lithographed in colors with brand name, design and other descriptive matter. The container, opened with a key, is manufactured by American Can Co.

The product, a chocolate-flavored egg

malt, contains sugar, malted milk, cocoa, dried whole milk and concentrated raw egg yolk. It is advertised as a rich source of necessary minerals, proteins and carbohydrates.

Whole-Grain Durum Macaroni

It is still macaroni, but it looks new and different in the whole-wheat form developed by Milwaukee Macaroni Co., Milwaukee, Wis. It is made from whole durum wheat, as are its kin, spaghetti, macaroni elbows and noodles, and sphaghetti elbows and noodles. Marketed under the brand name Pagliacci Red Arrow, the round, elongated 1-lb. package is wrapped in transparent cellulose and glassine. The brand name, slogan and trademark are printed on the transparent cellulose. The glassine inclosing the ends is patterned in red and white checks.

Creamed Tuna Ready-to-Serve

Recognizing the trend in sea foods toward canned read-to-serve products, Coast Fishing Co., Wilmington, Calif., is marketing Tunaetts Creamed. The

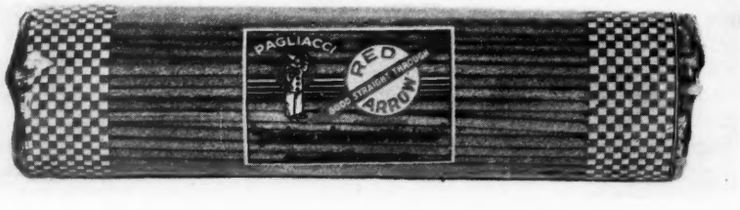
tenderloins of tuna fish are diced to convenient size, and mixed with a sauce made of whole milk, creamery butter, flour and seasoning. This mixture needs only to be heated for serving in the desired manner. The tin contains 12½ oz. avoirdupois of the product.

New Method of Dehydration

Vegetables may be dehydrated in one-third the time ordinarily required with a method developed by Berthold G. Freund and tested by Prof. Charles W. Thomas, chairman on the subcommittee on drying of the process committee of American Society of Mechanical Engineers, it is reported. And the process is said to retain the vitamins, so that the dried product is equal to the fresh in food value.

With the Freund-Thomas method, the vegetables are revolved rapidly in a draft of warm air, the temperature of which does not rise above 90 to 95 deg. F. The rotary movement throws moisture off the surface through centrifugal action, simultaneously extracting the capillary moisture from the inner cells.

Fruits, meats, fish and cheese can be dried in this way.



Spiced Ground Virginia Ham

Intended as *hors d'oeuvre* or sandwich spread, deviled Virginia ham is now being packed by Smithfield Ham & Products Co., Inc., Smithfield, Va. Having been cured by dry salting, spicing and heavy smoking, and aged for one year, the ham is deviled by cooking, grinding and seasoning with spices. The product is packaged under the brand name, Amber, in 4-oz., 7-oz. and 2-lb. glass jars closed with a strip-off metal cap.

Long-Life Brine for Olives

Anchovy-stuffed olives, one of the finer *hors d'oeuvres*, are now offered preserved in a special brine by Nomar Co., New York, N. Y. In the past they have been packed only in olive oil (thus they are imported from Spain), because experimental brines did not preserve anchovies long enough for commercial purposes. The brine now used is said to preserve them indefinitely without clouding or precipitating a sediment. Clouding is prevented by fitting back into the olive the piece removed for pitting and stuffing, thus completely inclosing the anchovy and excluding the brine.

The product, under the name D-Light, is marketed in 3-oz., 5-oz. and quart bottles, containing 18, 30 and 225 olives, respectively. The bottle and screw cap are products of Hazel-Atlas Glass Co., Wheeling, W. Va.

Canned Clams in the Shells

The problem of getting fresh clams at any time seems to have been solved by Halferty Corp., Seattle, Wash., with steamed Little Neck clams in tins. The clams are used as they are brought from their growing beds, and cleaned, even of sand, by a special process without being opened. The clams in the shells are placed in tins; the brine is added; and the tins are sealed and processed to sterilize the contents.

The tin used is size No. 3, which contains from 23 to 26 clams and enough nectar, when diluted properly, to make four cups. Although the product was intended primarily for restaurants, hotels, cafeterias, dining cars and steamships, it is being distributed also through retail stores.

Modern Book Has Scotch Tang

Fresh color and emphasis are added to an old packaging idea—the book candy box—by Reed Candy Co., Chicago, Ill., in packing butterscotch patties. The $5\frac{1}{2}$x$7\frac{5}{8}$-in. book is bound in Scotch plaid, with the title "I'm Scotch," and the author, Reed, printed on the front cover and backbone. Inside the front cover is a regular title page. On its reverse side is a first-person preface serving as a brief review of the book. The pieces are individually wrapped either in foil or in transparent cellulose, and the package is covered with transparent cellulose.

The book has run into more than 20 editions of from ten to twenty thousand copies each, including the special Century of Progress edition which introduced it on the market. Special holiday issues are planned.

Prepared Mix Bakes All

Biscuits, muffins, waffles, pancakes, doughnuts, dumplings, shortbreads—they can all be made from the same prepared flour mix, BakesAll, developed by Rumford Chemical Co., Rumford, R. I. The product contains wheat flour, dry whole milk, dry whole egg, phosphate leavening agent, sugar, soda, shortening and salt. Only milk or water needs to be added to complete the batter. The product is packaged in a cardboard carton holding 26 oz. net.

Distribution in New England and New York has been featured by the gift of a lintless dish towel, besides the premium coupon contained in each package.

What Food Men Are Doing

Major Change in Milk Control Plan Indicated by King's Resignation

A major change in the entire plan of milk control is forecast by the resignation on Dec. 16 of Dr. Clyde L. King, chief of the A.A.A. dairy division. The issue was clearly joined as part of the crisis which swept the food codes (excepting first processing) over to N.R.A., when Secretary of Agriculture Henry A. Wallace stated his doubt as to whether codes and marketing agreements can solve the agricultural problem, and expressed his personal conviction that production control must be exercised. He cited the milk agreements, some 300 of which are in process of discussion or had been planned under Dr. King. The Secretary said that the agreements had raised prices out of proportion to wage buying capacity and out of proportion to the price of butter. In other words, the city dweller has to cut down on his milk purchases when the price goes up, and the surplus milk goes into butter making, while the higher price encourages more production and thus more surplus butter.

King Opposed Differential

Dr. King was the firm exponent of the milk marketing agreements. His background was industry, his advisers were milk-industry officials. He was opposed to a high differential between house delivery charges and store prices, holding with the dairymen that the backbone of the milk business was the house delivery system.

A large proportion of this philosophy will go by the boards. The new acting chief of the dairy division of A.A.A., J. H. Mason, is general manager of the Des Moines Cooperative Dairy Marketing Association. He is said to have been active in the discussions that preceded the signing of the Des Moines milk agreement, the only one of the collection meeting with the approval of the ruling group in A.A.A., as it contained minimum prices to farmers and maximum prices to consumers, and touched on the production control idea.

Virtually every milk agreement so far negotiated has come to grief, and either the farmers or the dairymen or the grocers have asked for a reopening of the hearings and a revision of the agreements. Witness the Chicago, Boston and Baltimore agreements. As a result of the change in policy probably every milk agreement will be reopened, and complete changes in the type of agreement are expected. Beyond these, however, the plans for control of milk production will be of outstanding importance and probably will not be long delayed. This control may take the form of killing off tubercular cattle wholesale, the slaughter of weaker animals, and, as in the hog control plan, the killing of cows in calf. The bill would be paid for by a processing tax, which is expected to be levied at a rate of 4 cents a hundred pounds of fluid milk, being applied at the first processing.

No Action on Master Codes Despite Transfer to NRA

Food manufacturers and distributors are wondering when their fair trade practice codes will be signed, and they are beginning to worry. When Food Industries went to press, President Roosevelt's signature was not yet on the dotted line, and reports had it that the code was being withheld pending further negotiation between the administration and representatives of the trade.

When the three master food codes—those for manufacturers, distributors and retailers—were transferred from the A.A.A. to the N.R.A. more than a month ago, their prompt approval was expected. The N.R.A. and the industry apparently agreed without much trouble on the provisions of the codes, but it was said that General Johnson was too busy to go over them personally and hence could not pass them on to the President. The further delay was explained on the basis that Roosevelt had not yet signed the order formally transferring the codes to the N.R.A.

Genealogy

Food Industries was founded in October, 1928, by the McGraw-Hill Publishing Co. Dr. H. C. Parmelee was its first editor. Dr. Laurence V. Burton succeeded him and is its present editor. Associated with him are E. S. Stateler, R. S. McBride (Washington, D. C.), and L. C. McCarthy, assistant editors.

Tugwell Bill Being Revised; Wide Changes Indicated

After suffering severely at the hands of representatives from the food and drug industries, the "Tugwell" bill, S. 1944, is being revised, with indications that it will be modified substantially. It is impossible to ascertain at the present time whether the old measure will be amended or a new one created as a substitute. In any event, the bill number, S. 1944, will be retained.

A substitute for the so-called Tugwell bill also will come up. Sponsored by National Drug Trade Conference, this bill will be introduced in the coming session of Congress. The measure is reported to have been prepared from a consumer viewpoint, as well as from that of the supplier, and it is written to meet objections to the Tugwell bill as voiced at the Copeland hearing. The label and advertising provisions in the bill are, in effect, the same as those in the Tugwell bill.

Fourth Packaging Exposition To Be Held March 13-16

Accomplishments in the line of packaging, packing and shipping will come up for survey, praise and criticism March 13-16, when the Fouth Packaging Exposition will be held in the Hotel Astor, New York. And the package judged the best by a committee of experts will receive the third Irwin D. Wolf trophy, awarded by American Management Association.

At the clinics held during the four-day meeting, experts in package design will discuss problems of packaging and the merits of specific containers. Problems that have arisen in the packaging, packing and shipping industries

under the National Recovery Act will be considered.

Honorary awards will be made to fifteen groups or classes of packages, as follows: tin, glass, molded plastic, wood, tubes, visible display packages, paper bags and envelopes, set-up boxes, folding cartons, canisters, family packages, display containers, packages displaying merchandising ingenuity, shipping containers, miscellaneous.

The judges include:

Ralph Alexander, School of Business, Columbia University; Richard F. Bach, director of industrial relations, Metropolitan Museum of Art; Alon Bement, director, National Alliance of Arts and Industries; Fred G. Cooper, artist; Miss Katharine Fisher, director, *Good Housekeeping* Institute; W. Gordon Latham, president, Fort Orange Paper Co.; Miss Harriet Sartain, dean, Moore Institute of Art, Science and Industry.

Supreme Court Rules Against Tax on Oleomargarine

What is considered a victory of prime importance was won by oleomargarine manufacturers Dec. 4. On that date the U. S. Supreme Court affirmed a decree of a lower court which granted a permanent injunction against the collection of a tax of 10 cents a pound on margarin in Kentucky. The court, however, failed to pass upon the validity of the levy.

The Kentucky law is the first of fifteen such state measures to come up before the Supreme Court. Another, the Washington law, is under review.

The suit leading to the injunction had been filed by Field Packing Co., Bowling Green, distributor for Best Foods.

HARRY DRACKETT

Drackett Becomes Adviser

Harry Drackett, president of Drackett Co., Cincinnati, has been named special adviser to the Industrial Advisory Board. He succeeds R. W. Snow, executive vice-president of Canada Dry Ginger Ale Co., who recently relinquished the position of food adviser to the N.R.A. on account of illness.

Mr. Snow was appointed to that position only a short time ago, he being delegated to take the place of Clarence Francis, who had been serving since October and who returned to New York to resume his duties as executive vice-president of General Foods Corp. It was understood at the outset that Mr. Francis was to serve only until Dec. 1.

The new adviser, Mr. Drackett, is a past president of Associated Grocery Manufacturers of America and he has served as chairman of the Grocery Trade Practice Conference Committee.

Put Food Regulations in Codes

Various of the regulatory provisions of the bill amending the pure food and drug act are being embodied in the trade practice section of many of the codes and agreements now being adopted. Judging from letters on the subject reaching Washington, this is much more acceptable to the food and drug manufacturers and to publishers than the plan to provide for these changes by statute. Under codes, industries are self-regulating. Statutes are rigid and years must pass before they are interpreted. Code authorities can enforce the spirit of the act and would be less inclined than a government bureau to be arbitrary. Misrepresentation in advertising is regarded as particularly a matter that should be handled in trade-practice agreements.

A.A.A. Code Machinery Grinds Slowly; Argues Use of Tugwell Bill Provisions

The A.A.A. squeezed out little in the way of codes or marketing agreements last month, though it did try to squeeze into such documents the virtues of the "Tugwell" bill. At a hearing on its proposed code of fair competition, the peanut butter industry demanded that unfair competition provisions identical to those of S.1944 be stricken from the proposed code. At the same hearing, a fight arose over the labeling of other than first quality peanut butter, and was carried on between the northern and the southern branches of the peanut industry.

The attack on the Tugwell bill was led by W. F. L. Tuttle, executive secretary of the Peanut Butter Institute, who asserted that certain provisions are "ambiguous and unsound" as well as untested in Congressional debate. He was supported in his approval of the standardizing provisions of the code.

On Dec. 17, Secretary Wallace gave tentative approval of the marketing agreement of the peanut milling industry, which fixes a minimum price to growers and sets up an administrative board on which growers and millers are equally represented.

Code activities during January include the public hearing on the proposed wheat flour millers' code, set for Jan. 15; decision by Secretary Wallace on the revised marketing agreement for the packing industry; and the completion of the canners' code by the administrative council of the National Canners' Association.

The latter has been pending since July, and has been once revised since then. One of the changes being considered is the incorporation of the Tugwell bill provisions covering labeling, misbranding, advertising and container content. These provisions would be inserted under unfair trade practices, the N.R.A. penalties to be invoked if violated.

Hors d'Oeuvres

SWIFT & CO. substituted gas for coal at Chicago. Whereupon a coal association bulletin stated that packers should not be surprised if bituminous coal operators refused to buy Swift products. And we thought the coal operators had reformed.

•

KANSAS RESTAURATEURS have chosen Mae West their patron saint because her curves have made the ladies prefer longer menus. What's more, the Jayhawkers invited her to come out and see them—any time. Bait: a free meal ticket.

•

ELLIS W. ERICKSON, who studied agricultural economics under Prof. Rexford G. Tugwell, has become manager of the F. W. Potter Flour Mill, Churchville, N. Y. Perhaps there now is one food man who will support the assistant secretary.

•

NO LONGER will the Beech-Nut line of strained foods be labeled "baby" food. It seems there is a large adult market for these strained products, but—well, a man wouldn't drink milk from a bottle.

•

THE GOVERNMENT raised the price of milk, the people bought less milk, so more milk was made into butter, of which there was already much too much. Which makes whom what?

•

BAKING POWDER packed in a lamp chimney stood on the shelf of a grocery in Chetek, Wis., for 49 years. Maybe that isn't something for exponents of reuse containers to think about!

•

FIORELLO LaGUARDIA is reputed to be expert at preparing spaghetti. And not so bad at Tiger stew, either.

Double French Quota Dismays Domestic Wine Producers

Domestic wine producers view with some dismay the recent 100 per cent increase in the French import quota, chiefly because on the Pacific Coast alone a 1933 vintage of 23 to 28 million gallons is expected. Even though the French quota has become but 1,500,000 gal., they fear the possibility of like increases being awarded to other wine-producing countries and the resultant narrowing of the natural domestic market.

But contrary to the vintners' aversion to the Franco-American agreement, there is balm in it for apple and pear growers; they can now sell four times as much to France as before, the quota being 20,000 long tons.

Under the old code of the wine-making industry, producers would not have had cause to worry about overproduction, as capacity was to have been limited. But under the revised code, now in the hands of Secretary Wallace for action, production levies have been eliminated. Administrative control will be vested in two committees, one for the western and one for the eastern wineries. A code authority, consisting of three members of the western, two members of the eastern committee and two representatives of the Federal Alcohol Control Administration, will supervise the code committees.

Tri-State Canners Meet; Fear Overproduction

Canners in the Tri-State section fear an overproduction in 1934 of vegetables for canning and believe that marketing agreements should be put into effect to cover tomatoes, corn, peas and stringless beans. A resolution adopted at the concluding session of Tri-State Packers' Association in Philadelphia Dec. 14 states that the organization favors the development of those marketing agreements, and another authorizes appointment of representatives to confer with other associations to arrive at an industry-wide decision.

The association also went on record as favoring piece-rate payment to employees for handling tomatoes and advocated a fixed piece-rate for each area to assure a fair average wage for the entire season. The association also declared itself in favor of labeling members' products grade A, B and C to show quality to consumers.

J. W. Tapp, of the special crops section of the Department of Agriculture, told the canners that the industry was faced with a probable overproduction again in 1934.

E. V. Baker, Shelbyville, Del., was elected president of the association to succeed Allen T. Stevens, Cedarville, N. J.

Hog Tax Still $1

Fearing further depression of a hog market that hit new lows under the initial processing tax, Secretary Wallace on Dec. 22 announced that the processing tax on hogs would remain at $1 per hundredweight until Feb. 1. According to the original regulations, the tax was to go to $1.50 on Jan. 1. On March 1, the rate becomes $2.25.

Roosevelt Extends P.R.A.

Faced with the prospect of wages being reduced in many industries not covered by codes when the President's Reemployment Agreement terminated Dec. 31, President Roosevelt on Dec. 20 invited industries not under codes to extend their operations under the reemployment agreement. The President would like industries to continue on the remployment basis for another four months, at which time it is expected that virtually all will be operating under approved codes of fair competition.

The display of the Blue Eagle on or after Jan. 1 by an employer without a code will be considered acceptance of the reemployment agreement extension.

CONVENTIONS

JANUARY

1-8—Northwest Canners' Association, Washington Hotel, Seattle, Wash. E. M. Burns, Board of Trade Bldg., Portland, Ore., secretary.

9-10—Eastern Soda Water Bottlers' Association, Hotel Bradford, Boston. Hugh J. McMackin, 33 Portland St., Boston, secretary.

15-19—National Canners' Association, 27th annual; Food Brokers, Canning Machinery and Supplies, Stevens Hotel, Chicago, Ill. Marc C. Hutchinson, president.

15-19—American Fruit and Vegetable Shippers' Association, Palmer House, Chicago, Ill. E. S. Briggs, 1425 Racine Ave., Chicago, Ill., secretary.

17-18—New England Association of Ice Cream Manufacturers, Copley-Plaza Hotel, Boston, Mass. W. P. Lockwood, 51 Cornhill, Boston, secretary.

FEBRUARY

5-6—Potomac States Bakers' Association, Baltimore, Md. Lee L. Robinson, First National Bank, Baltimore, secretary.

5-9—Heating and Ventilating Exposition, 3d International, Grand Central Palace, New York, N. Y. Charles F. Roth, manager.

8—National Cheese Producers' Association, Plymouth, Wis. R. B. Melvin, Plymouth, Wis., secretary.

19-24—First International Beer and Wine Show, Grand Central Palace, New York, N. Y.

—American Honey Institute. Malitta F. Jansen, 417 North Few St., Madison, Wis., secretary.

—Dairy and Ice Cream Machinery and Supplies Association. C. Earl Breece, 232 Madison Ave., New York, N. Y., secretary.

Butter Manufacturers Want Better Production Control

Measures by which the production of butter fat could be kept within the limits of consumer demand were uppermost in the minds of the large group of creamery men in attendance at the 25th annual convention of American Association of Creamery Butter Manufacturers, held Dec. 5 in Chicago. As a step toward proper control, the association passed a resolution to the effect that it should be the duty of the administration to control the production of butter fat in milk in those areas where the price of milk is regulated and, further, that the producer of milk for the fluid milk trade should not be permitted to produce surplus milk to be converted into butter.

As a means of controlling production of milk and butter fat, the butter manufacturers favor a government plan whereby tubercular cows will be eradicated from all herds in the country.

As is usual when food men get together, the proposed Food and Drug bill came up for discussion. And the association went on record as opposed to the repeal of the butter standards act of March 4, 1923. While agreeing that it might be well to extend the food and drug regulations to cover advertising and take jurisdiction over cosmetics, the butter men felt that the food provisions should remain as they are.

Other resolutions recommended the study of conditions which may lead to the purchase of cream on a graded basis, a committee being appointed for this, and the incorporation of the association to form a non-profit corporation.

E. F. Howe, Fairmont Creamery Co., Omaha, was elected president; H. C. Herneman, Danville, Ill., vice-president; J. A. Borman, Beatrice Creamery, treasurer; W. F. Jensen, secretary-manager (reelected).

Baker Wins Court Decision

Typical of the hundreds of attempts made by individuals to collect money from food companies is a suit just decided in favor of Henry S. Levy & Son, Inc., by the Supreme Court, Kings County, New York. A man and his wife sued the company for damages said to have been suffered as a result of negligence on the part of the company, which permitted rat feces to be contained in a loaf of bread.

Since the plaintiffs testified that they ate some of the bread without looking at it, it was pointed out by the defendant that both plaintiffs were guilty of contributory negligence. A second point in favor of the defendant was established on the grounds that the plaintiffs failed to produce any of the foreign substance as evidence. Further, it was indicated that there was

no way of determining the character of the foreign substance, inasmuch as it had never been subjected to any scientific analysis. Lastly, the defendant gave testimony showing the care employed in baking its bread.

Loft Clawed by Eagle

In what was regarded as its most important test to that date, the N.R.A. on Dec. 8 ordered Loft, Inc., through its stores subsidiary, to pay as arrears the difference between the 28-cent wage agreed upon in the blanket code and that actually paid. This decision was made even though Loft had formally protested against the code as finally drafted.

More than 125 complaints had been filed against the company at the New York office of the National Compliance Board. In Washington, Gen. Hugh S. Johnson had stripped the five Loft stores of their Blue Eagles, later returning them on the promise that the company would comply with conditions of the N.R.A.

Higher Tariff on Fish in Oil

Import duties on fish packed in oil have been increased to protect domestic packers of tuna and sardines. This step was taken Dec. 15, when the President approved a Tariff Commission report specifying an increase in the duty on tuna from 30 per cent to 45 per cent, ad valorem, and an increase from 30 to 44 per cent in the duty on other fish packed in oil, when of a value not exceeding 9 cents per pound; at more than 9 cents, the 30 per cent duty remains.

This new tariff schedule will aid the tuna packers in California, who put up about 95 per cent of the total domestic pack in oil. Production of tuna in California reached a peak of 45,000,000 lb. in 1930 and dropped to about 28,000,000 lb. in 1931 and 1932. Prior to 1931, imports were insignificant, but in that year they amounted to 935,000 lb. and a year later had reached 5,945,000 lb. Imports are principally from Japan.

Maine produces about 96 per cent of the total domestic pack of sardines in oil, her record output being 69,278,000 lb. in 1904. In 1932, production totaled only 11,258,925 lb., the smallest pack since 1898. Of the 42,000,000 lb. of sardines imported in 1932, about 70 per cent came from Norway and 25 per cent from Portugal.

The new rates of duty become effective Jan. 13.

Short Courses Scheduled

Dairy short courses scheduled for the winter months include three at Penn State, one at the University of Illinois, and one at Washington State. Courses at Penn State will include: butter and cheese, Jan. 8-20; ice cream making, Jan. 22-Feb. 3; marketing, milk and milk control, Feb. 5-17. The course at Illinois will deal with phases of dairy manufacturing, while that of Washington State Institute of Dairying will present problems and scientific developments to experienced dairymen. Siebel Institute will open its regular two months' intensive course in baking technology Feb. 5.

Bakery Salesmen Not Peddlers

Baking company salesmen are not peddlers when on their regular routes. This, in effect, is the decision made by the Circuit Court for Queen Anne's County, Maryland, in a recent case involving a driver for William Freihofer Baking Co., Wilmington, Del.

In this particular instance, the driver was not on his regular route and the company's counsel advised that the fine be paid. However, it was agreed by the state's attorney that the statute involved would not be violated if the baking company delivered from trucks following established routes to regular customers who have placed orders in advance for such products. Written orders are not necessary, nor is it necessary that the salesman know in advance of his call on a customer what the customer will require or whether he will wish anything on the occasion of the visit. It is necessary, however, that the customer indicate in advance that it is his desire that his name be added to the salesman's route list, and that the salesman's call be made at the time of his regular trip.

Parade of the Glass Soldiers

This view of a corner of the Beaulieu Vineyard Winery at Rutherford, Calif., typifies the activity in the wine industry of the Sunkist State and other domestic wine-producing sections. During the prohibition era, the vintners made much progress in the art of wine making. Now they stand ready to challenge the superiority of the imported wines and to supply the domestic market.

Concentrates

To avoid a glut in the beef market next year it is held likely that the administration will purchase 1,000,000 head of canner cattle for processing and distribution among the needy . . . Secretary Wallace on Dec. 15 announced termination of butter buying through Dairy Marketing Corp.; Federal Surplus Relief Corp. will continue to make purchases . . . The A.A.A. will seek at the next Congress to have sugar cane and beets included as basic commodities in the Agricultural Adjustment Act, so that benefit payments can be made to domestic producers . . . Licensing of all livestock packers is asked in a resolution adopted in the Iowa Legislature . . . The Wisconsin Senate has adopted a resolution requesting the administration to take over and close all plants making butter and lard substitutes . . . Governor Langer of North Dakota on Dec. 6 declared a state-wide embargo on all shipments of beef cattle out of the State . . . Producers of edible oils have put in a plea at Washington for a tariff of from 2½ to 5 cents a pound on competing imports . . . A law for the market control of butter, cheese and eggs, similar to the oil and fat monopoly, was passed by the German Cabinet Dec. 15 . . . France has increased the duty on canned asparagus to a minimum of 200 francs and a general rate of 600 francs per 100 kilos . . . With the advent of repeal on Dec. 5, many brewers stepped the alcoholic content of their beer up to 4 per cent by weight . . . Date Industries Association has elected Ernest G. Draper, Hills Bros. Co., New York, president, and J. E. Brand, Urbana, Ohio, secretary and managing agent; the date code was the first food code approved by the A.A.A. . . . The Department of Commerce has issued the simplified practice recommendations for fiber boxes for canned fruits and vegetables.

MEN . . . JOBS . . . AND COMPANIES

Industry

ASSOCIATED CRAB PACKERS, INC., with headquarters at 516 Munsey Bldg., Baltimore, has been formed by packers in the Chesapeake Bay area. Its president is N. R. Coulbourn, Crisfield, Md.

BIRKS CRAWFORD, LTD., Vancouver, has added two varieties of mushrooms to its canned foods line on the western Canadian market. The mushrooms are canned, both grilled and creamed, and are ready to serve.

BOOTH FISHERIES Co. may not rebuild its Eastport (Me.) sardine factory and warehouse, destroyed early in December by fire at a loss of $100,000, but may use other idle plants suitable for sardine packing.

CALIFORNIA PACKING CORP. and Tillman & Bendel, Inc., recently ended their dispute over the use of the name Del Monte on coffee when the latter firm agreed to surrender it.

CONTINENTAL SUGAR Co., Toledo, plans for reorganization will enable each holder of $1,000 of first mortgage 15-year 7 per cent sinking fund bonds to receive $500 in cash and $750 in second preferred stock. Each bondholder may subscribe for eight shares of first preferred stock and eight shares of common at the same price at which the bankers will underwrite the issue.

GOLDEN STATE-ATHENS BAKING Co., Fresno, Calif., is building a $50,000 plant, to be completed early this year, chiefly for wholesale production.

GREAT WESTERN SUGAR Co. preferred stockholders F. W. Park and R. W. Frazer, both of Denver, are protesting the transference of approximately $9,000,000 of assets to a new company, Cache LaPoudre, and the distribution of the new company stock to Great Western common stockholders.

H. J. HEINZ VINEGAR WORKS, Holland, Mich., is being repaired, having been damaged recently by fire to the extent of $5,000.

IROQUOIS CANNING Co. plant, Onarga, Ill., will be operated next season under its new owners, Weaver Carrington and Harry Stine.

KREMKO Co., Chicago, recently added a candy manufacturing department.

MILLER BREWING Co., Milwaukee, has ordered from Dunck Tank Works, Milwaukee, 200 tanks of cypress and redwood to hold 100,000 bbl. of beer.

MORGAN PACKING Co., Austin, Ind., has recently added to its plant $40,000 in equipment for packing string-beans.

NATIONAL CHICLE Co., Cambridge, Mass., has been formed by three former officials of the Goudey Gum Co. The principals of the new incorporation are: Alvin S. Livingston, former vice-president and sales manager of Goudey; Walter E. Leary, former president, and John McCormick, former plant superintendent. Production began about the middle of last month.

NATURAL FOOD PRODUCTS CORP., Orange, Cal., was recently reorganized, Robert Patterson, San Francisco, becoming president, and Milo R. Daughters, Santa Ana, becoming vice-president and manager of production and development.

PACIFIC CONTINENTAL GRAIN Co., Portland, Ore., is conducting negotiations for the erection of a 2,000,000-bu. grain elevator at Vancouver.

PEERLESS CORP., Cleveland, recent entrant in the brewery field, has filed suit against Redmond Co., New York bankers, in New York federal court to force the acceptance of 92,071 shares of stock at $5 a share under the underwriting agreement signed on Aug. 29. The bankers refused to accept the stock on Nov. 24, because the Peerless charter seemed to be violated when the brewing subsidiary was formed.

PHOENIX DAIRY, Houston, Texas, the property of M. C. Oldham, will pass to the employees through a plan enabling them to buy over a period of years the entire plant at about the cost of the physical assets.

STANDARD BRANDS, INC., will build a million-dollar plant for the manufacture of yeast at Oakland during the ensuing year. The employment of 130 persons is proposed.

ST. LOUIS DIVISION, Central States Section, American Association of Cereal Chemists, met Dec. 9 at the Mark Twain Hotel in St. Louis. One of the features was a moving picture showing the manufacture of yeast, with explanatory comments by George S. Bratton, Anheuser-Busch, Inc.

STATE CANNING PLANTS will be established at Dallas, San Antonio, Houston, Amarillo, Forth Worth and Austin, Texas, to process the half million dollars worth of meat to be distributed in Texas relief work in 1934.

STONE HILL WINE Co., Hermann, Mo., planning to resume the production of wines and liquors, has registered 27 trademarks for various wines and other products.

T. C. WARD & Co., Longview, Texas, has begun operations in its new packing plant.

WESTPORT PACKING CORP., Westport, Ind., has been formed to engage in food packing and canning.

WORCESTER BAKING Co., Worcester, Mass., is to be enlarged by an addition 100x60 ft. costing $25,000.

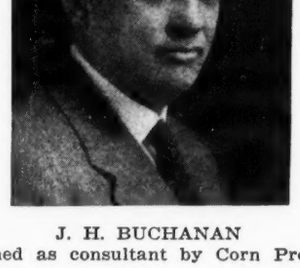
PERSONNEL

HIRAM BEARD, Allison-Bedford Co., has succeeded Dave Baxter, Oelrich Berry Co., as president of Chicago Food Manufacturers Pool Car Group. The headquarters of the group during January conventions will be the Congress Hotel.

JOHN C. BRUCKMANN, president, Bruckmann Brewing Co., Cincinnati, and E. J. Brown, Esslinger Brewing Co., Philadelphia, have been appointed representatives of American Brewers' Association to assist in the formulation of an industrial code.

J. H. BUCHANAN, professor of food and sanitary chemistry, Iowa State College, has been retained by Corn Products Refining Co. as consultant in the development of the use of anhydrous cerelose as a sugar for carbonated beverages.

E. A. CRADDOCK, Union City, Tenn., has purchased ground in Obion on which he will erect a modern two-story cannery of 50,000 cases capacity. With a staff of 200 persons, the plant will can tomatoes, beans, sweet potatoes and other vegetables.



J. H. BUCHANAN
Retained as consultant by Corn Products

C. O. DAWSON, Blair (Neb.) Canning Co., was elected president at the recent convention of Iowa-Nebraska canners.

JOHN R. DOWNEY, formerly treasurer of Washington Breweries, Inc., Columbus, Ohio, has succeeded the late William H. Joyce as president. E. E. FOLLMER has become secretary-treasurer.

W. EDWARD FOSTER, vice-chairman of the board of directors, American Sugar Refining Co., celebrated the rounding out of 50 years of service with his firm and predecessors at a banquet in his honor on Dec. 24.

OLLIE GILLIATT, Vincennes Packing Co., Vincennes, Ind., has been reelected president of Indiana Canners' Association for 1934.

HARMAN GITTNER, Clinton, Iowa, was retained as president of the State Association of Ice Cream Manufacturers during their 24th annual convention last month at Cedar Rapids.

PHILIP P. GRAY, formerly with Pease Laboratories, Inc., New York, is now in the employ of Wallerstein Laboratories, also New York.

RICHARD S. HAWES, JR., new president of the A.B.C. Brewing Corp., St. Louis, has announced that his firm will spend $125,000 in rehabilitating the old plant of the American Brewery Corporation. Production is to start Feb. 1.

RUDOLPH A. HUBER, vice-president of Anheuser-Busch, Inc., has been tentatively selected to represent the Middle West on a national board of nine to supervise the brewing industry's code.

JESSE D. HURLBUT, who resigned recently from Toledo Grain & Milling Co., after 37 years' service, has been presented with a life membership in Toledo Board of Trade.

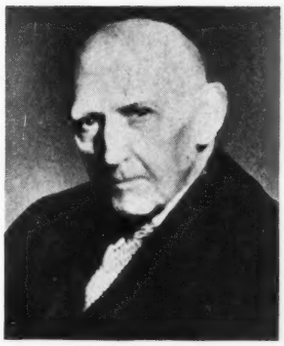
W. L. ISERMAN, Kenosha, was elected president of Wisconsin Ice Cream Manufacturers' Association at its annual convention at Milwaukee last month.

C. T. LARDIE, Traverse City Canning Co., was elected president of the Michigan Canners' Association in convention Dec. 6-7. DAVID H. DAY, JR., Glen Haven Canning Co., is vice-president, and FRANK RAYMOND, Gerber Canning Co., Fremont, secretary-treasurer.

HARRY MCCARTNEY, formerly president of Sears & Nichols Corp., Chillicothe, Ohio, has organized Good Foods, Inc., Tampa, Fla. The plant will pack fancy grapefruit hearts and grapefruit juice.

H. A. MILLER, St. Joseph, Mo., was elected president of the Missouri Bottlers of Carbonated Beverages at its 27th annual meeting, held at Columbia.

WILLIAM T. Nardin, vice-president and general manager of Pet Milk Co., St. Louis, was reelected president of the Industrial Club of St. Louis at its annual meeting last month.



ARTHUR L. SOMERS
Standard Brands veteran dies

FLOYD B. SWIFT, president of the Tennessee Neon Co., has become secretary and manager of Fortune's, Inc., wholesale ice cream manufacturer, Memphis, Tenn.

C. A. THOMPSON, formerly manager of the Birmingham branch of H. J. Heinz Co., is now manager of the Memphis branch.

ARTHUR TROILO, formerly manager of the San Antonio Anheuser-Busch yeast agency, has become manager of Corpus Christi (Texas) plant of Richter Baking Co.

CECIL H. WRIGHT, sales manager and auditor of Mayflower Dairy Co., North Little Rock, Ark., was elected a director of the Southern Association of Ice Cream Manufacturers at its third annual convention at New Orleans recently.

DEATHS

CHARLES E. DICKINSON, president, Niagara Falls Milling Co., Lockport, N. Y., died Dec. 7 at 71 years of age. He was regarded as an authority on the use of water power for flour-milling purposes.

WILLIAM E. GORTON, founder of Gorton Chocolate Co., Corning, N. Y., died on Dec. 4 at his home. He was 80. He had been in the candy business since 1882, when he became head of the Munger Candy Co., which later developed into the Gorton Co.

ARTHUR L. SOMERS, presented with a gold medal several weeks ago by the city of Cleveland in token of his 64 years of service with Standard Brands, Inc., and its predecessors, died at Cleveland five days previous to his 88th birthday.

W. E. SUITS, vice-president of Quaker Oats Co., Chicago, died suddenly Dec. 17 at Kenilworth, Ill. He had been identified with his firm and its predecessors for more than 40 years. He also had been active in the affairs of American Feed Manufacturers' Association.

JOHN J. THOMAS, organizer and president of the Klotz Cracker Factory, Ltd., New Orleans, died Dec. 7 at the age of 86. He had been in business 69 years.

ARTHUR C. UIHLEIN, secretary-treasurer of the Waukesha-Roxo Co., Milwaukee, and a member of the executive board of the American Bottlers of Carbonated Beverages, died Nov. 18 at Milwaukee.

GEORGE C. VOLTZ, superintendent, Jacob Dold Packing Co. plant, Buffalo, died Nov. 30 at 54. Starting as office boy at 14 in a Kansas City plant, he had spent 40 years in the packing industry.

GROVE E. WARNER, treasurer, Malt-Diastase Co., Brooklyn, died Dec. 1 at Greenwich, Conn. He was 57. One of the owners of the Malt-Diastase Co., he had taken an active part in its management since his retirement from the Warner Sugar Refining Co. nearly five years ago. He was vice-president, Compañia Azucarrera Central Miranda, owner of Cuban plantations.

Associated Industries

A. EUGENE BRADY, vice-president and treasurer of Jenkins Bros., New York, died recently at the age of 58. During his 40 years with the company, he rose from junior clerk to director.

BRISTOL CO., LTD., has recently been formed by Bristol Co., Waterbury, Conn., to handle its Canadian business. However, Powerlight Devices, Ltd., Montreal and Toronto, will continue as distributor in Quebec and Ontario.

CANNING AND PACKING MACHINERY INDUSTRY and packaging machinery industry and trade have appointed a joint code control committee, with Ogden F. Sells, vice-president, Food Machinery Corp., as chairman.

CREAMERY PACKAGE MANUFACTURING CO., Chicago, has appointed C. M. Cory, formerly manager of the Kansas City branch office, general sales manager.

ALEXANDER LEGGE, for many years president of International Harvester Co. and first chairman of Federal Farm Board, died Dec. 3 at Hinsdale, Ill. He was 67. ADDIS E. MCKINSTRY, for two years vice-president of the firm, has been elected to succeed Mr. Legge.

F. EDWARD O'NEIL, who started as an apprentice in the machine shop of Fulton Iron Works, St. Louis, in 1905, was recently elected president.

TYSON ROLLER BEARING CORP., Massillon, Ohio, has been granted a patent on the Tyson cageless, tapered roller bearing by the British government.

BUSINESS TRENDS

Butter Surplus in Storage Totals 97,000,000 Lb.

Greatly abnormal production and greatly subnormal consumption of creamery butter during the first ten months of 1933 accounted for a surplus cold-storage supply of approximately 97,000,000 lb. The increase in production during the period was 48,000,000 lb., the decrease in consumption 49,000,000. These figures are reported by National Cooperative Milk Producers' Federation.

Since, on the basis of figures for the past few years, both production and consumption would normally be expected to increase 30,000,000 lb. during the first ten months of 1933, the large surplus may be attributed to an increase in production of 18,000,000 lb. and a drastic decrease in consumption of 79,000,000 lb. Total storage holdings were 65,006,000 lb. greater than the average for the five years, 1928-1932.

According to production figures for states, Iowa, Minnesota and Nebraska accounted for the major portion of the surplus, while Wisconsin, Washington and Illinois decreases affected the totals negatively.

BASIS FOR THE CURVES

Retail food prices, factory employment, factory payrolls and wholesale prices are based on indexes of the Department of Labor. Cost-of-living index is that of the National Industrial Conference Board. Electrical power consumption figures are furnished by *Electrical World*.

Food Again Drops

Butter and egg prices, despite administration efforts to bolster them, scored sensational drops during December; grains likewise declined substantially. Large accumulations in stock and subnormal demand account chiefly for the reactions.

Business activity during the past month was nearly 20 per cent greater than in December, 1932, and even slightly above the 1931 level. Increases in industrial operations, railroad traffic, Christmas buying and building awards were the chief causes.

The Business Week Index of business activity stands at 62.4 per cent of normal for the week ending Dec. 16.

Wholesale prices reported by U. S. Department of Labor reacted slightly during the week ending Dec. 16 to 70.8, only 0.9 per cent below the year's high, 71.7, Nov. 18. Manufactured foods were 2.4, farm products 2.6 per cent lower.

All commodities during the month ended Dec. 16 rose 0.1 per cent in the New York *Journal of Commerce* weighted price index; grain, however, was off 2.2 and food 1.0 per cent.

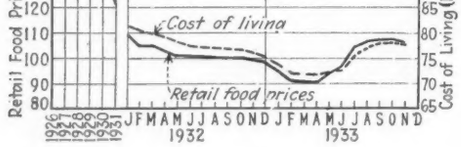
A. & P. tonnage sales for five weeks ended Dec. 2 were 6.78 per cent less than in the same period, 1932, and were only 22.5 per cent greater than for the 4-week period ended Oct. 28.

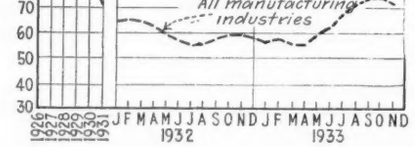
Hog Prices Register Decline Equaling Processing Tax

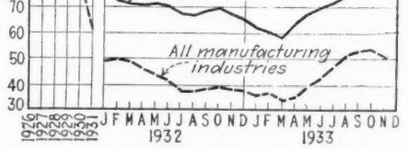
Hog prices, having declined steadily since Nov. 5, the date of the imposition of the processing tax on pork, reached a mid-December level only slightly above the 1932 lows. The amount of decline since early November was almost precisely the amount of the processing tax.

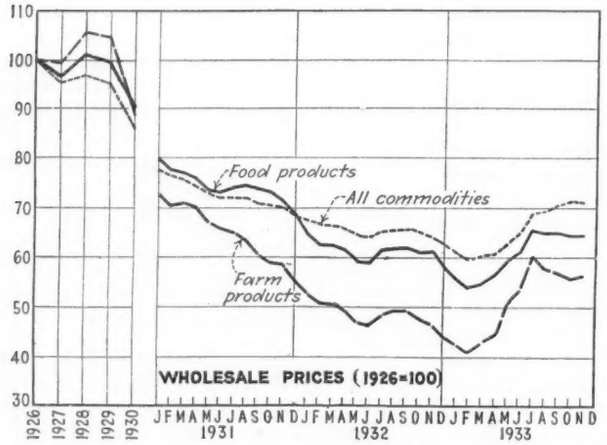
At the same time, other livestock prices declined also. The basis of the drop, it is apparent, was a marked increase in the movement in all livestock to market, the volume of slaughtering being considerably above that of the last several years. The situation caused by the surplus meat supply might have been relieved somewhat if supplies of so-called competitive foods had been short; but the production volume of such foods as butter, eggs, cheese and poultry was equally high.

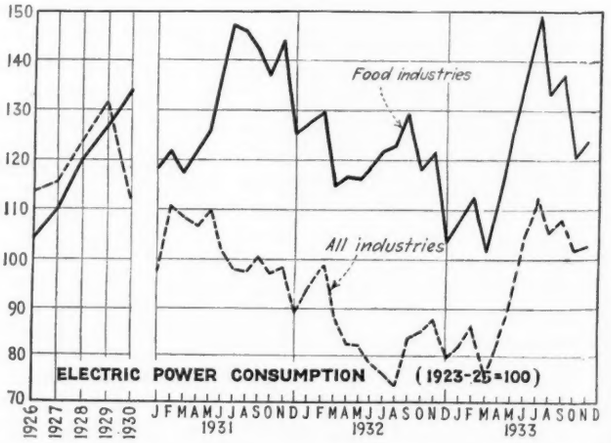
Another cause of the present low hog prices, according to W. W. Woods, president, Institute of American Meat Packers, is the failure of consumer purchasing power to keep pace with the increase in production. But, since the lag in consumer buying power has affected the marketing of other basic foods and commodities, it is doubtful whether such a view is as sound as it appears to be. As leading meat processors have pointed out, it is dangerous to pass the processing tax on to the consumer, as he might be turned to competing foods.


RETAIL FOOD PRICES, COST OF LIVING
Retail Food Prices (1913=100)
Cost of Living (1923=100)
Cost of living
Retail food prices
1926 1927 1928 1929 1930 1931 1932 1933









Consequently, the packers have found it necessary to set their price to the seller on the basis of the price they can be sure of obtaining at retail.

Cold-Storage Holdings Mount

Cold-storage holdings of dairy products, eggs, poultry, meats and lard on Dec. 1 all showed substantial increases over those of the same date last year, according to Bureau of Agriculture Economics figures. Holdings of American cheese, butter, meats and lard also showed substantial increases over the average stocks for the last five years. Pickled-pork holdings were approximately 25 per cent larger than the five year-average, while all meat stocks were more than 16 per cent larger.

Swiss Cheese Imports Fall

Importations of Swiss cheese during the first ten months of 1933 were approximately 17 per cent less than during the same period last year, or 9,500,000 lb., as compared with 11,500,000 lb. last year. The improved quality of the domestic grade is given as the reason for the decrease.

Kraut Pack Cut 60 Per Cent

Because the 1933 harvest of cabbage for kraut was the smallest in the last seventeen years, the total kraut pack was only about 40 per cent of the last five-year-average. The packs of the four leading states in 1933, in terms of their average kraut output, were: New York, 60 per cent; Wisconsin, 48 per cent; Ohio and Michigan, 20-25 per cent. Although the price of cabbage for kraut was about ten times last year's price, the great increase to the packer has not been reflected in the price to the consumer.

Corn Pack Up 9 Per Cent

Corn canned during the season just past amounted to 10,192,730 cases, more than 800,000 cases, or 9 per cent, larger than the pack of 1932. Such are the Bureau of Foreign and Domestic Commerce figures. The greatest increase over last year's pack in any one State occurred in Iowa, for the pack was nearly 700,000 cases larger than in 1932. This increase was partially compensated by a decrease in Indiana of 300,000 cases.

Loses Caviar Markets

Certain Northwest packers of red salmon caviar find it impossible to say much good for American recognition of the U.S.S.R. As Russian sturgeon caviar manufacturers refused to sell their product to French and German dealers unless they agreed not to handle the American salmon product, the principal markets of Europe are closed, while stocks of salmon roe in the Northwest lie in storage.

Sees Continued Improvement

"It is evident that the N.R.A. is under way slowly, and it is inevitable that the increased employment and the increased wages will have a growing tendency to assist the general trend of business back to normal. I believe we shall begin to notice this in March or April at the latest, and I am therefore very optimistic for business prospects during the coming year." These are the words with which George H. Williamson, president of National Confectioners' Association and head of Williamson Candy Co., expresses his outlook upon the future.

INDICATORS

DOLLAR VOLUME of grocery sales in 70 per cent of the chain units of the country during November, 1933, was about one per cent higher than in 1932. Total sales in the first eleven months of the year were 7½ per cent below a similar period in 1932.

RAW SUGAR EXPORTS to the United States from Cuba during the first eleven months of 1933 totaled 1,318,808 tons, a decline of 303,516 tons, or 18.7 per cent, from the same period in 1932.

SALES VOLUME of Swift & Co. in the fiscal year ended Oct. 28, 1933, was the largest since the founding of the company.

SALES of all types of confectionery, generally better in the autumn months of 1933 than in the two years previous, were 6½ per cent higher in October than in the preceding year.

MICHIGAN CHERRY STOCKS were reported on Dec. 1 to have been sold in considerably larger quantities than at the same time in 1932.

BRITISH COLUMBIA'S 1933 salmon pack totaled 1,110,073 cases, some 662,000 more than in 1932.

H. J. HEINZ Co. factories are reported to have had 51 per cent more employees on their payrolls in 1933 than in 1932.

WORLD WHEAT CROPS for 1933 are estimated by Bureau of Agricultural Economics to be 4,380,000,000 bu., or 97,000,000 bu. less than in 1932.

WAGE INCREASES of 4 cents per hour were granted unskilled workers and adjustments promised skilled workers at Chicago plants of Swift & Co., Armour & Co. and Wilson & Co. during December. At St. Louis and East St. Louis, employees of Swift and Armour were granted increases up to 10 per cent.

TRUCK CROPS in 1933 yielded to growers an average of $31, gross, per acre, the low of the downtrend since 1929.

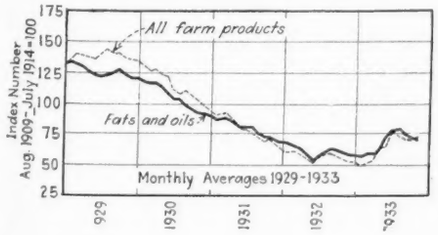
NET PROFITS of Cudahy Packing Co. for the fiscal year ended Oct. 28, 1933, were just double those of the preceding year, or $1,813,766. Other large packers report equally large gains over 1932.

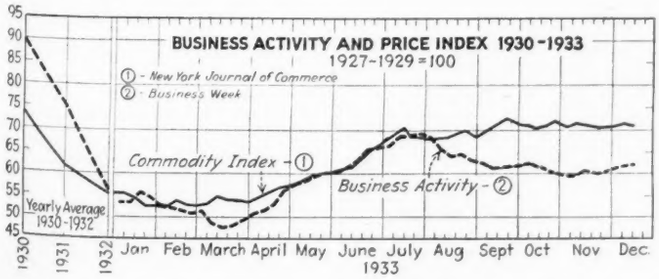
SOUTHERN FARMERS who got cotton loan checks are engaged in raising hogs, beef, corn and hay—for home use.

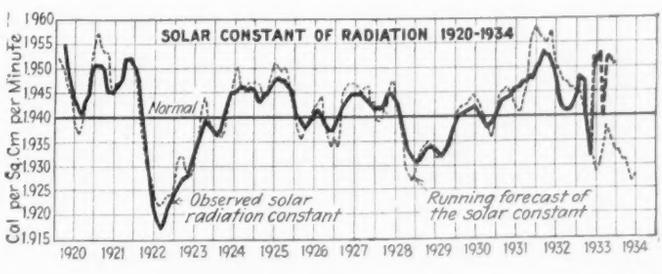
CONSTRUCTION NEWS

	Pending (thousands)	Awarded December	Total Awarded 1933 (thousands)
Bakery Products	$144	$28	$1,500
Beverages	6,814	2,347	26,594
Canning and Preserving	381	510	899
Confectionery	30	...	559
Grain Mill Products	2,168	50	3,127
Ice, Manufactured	100	...	544
Meats and Meat Products	556	...	...
Milk Products	266	98	1,471
Sugar	45	...	...
Miscellaneous	141	30	1,104
Total	$10,645	$3,063	$35,798

Price Index for Fats and Oils



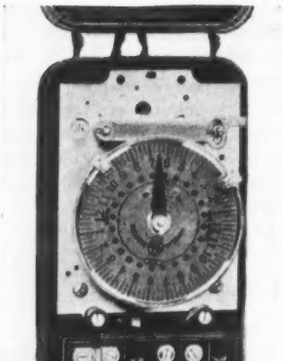




NEW • EQUIPMENT • FOR

Cooking Kettle On Pedestal

Attractive in appearance and designed for high standards of sanitation, the pedestal type cooking kettle, introduced by Aluminum Cooking Utensil Co., New Kensington, Pa., marks a departure from the usual stand arrangement. Steam and return lines are inclosed in the pedestal, access to the fittings being gained through a door in the back. The cooking unit, or jacketed kettle itself, is available in both the No. 1 and No. 3 rigid "Wear-Ever" kettles.

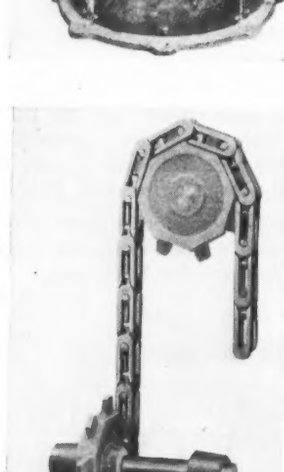


Time Switch

Designed for indoor service, the automatic time switch, type T-15, announced by General Electric Co., Schenectady, N. Y., is available in twelve forms. It may be had with or without a device for skipping the operation on certain days, for either 115 or 230 volts, and for single-pole, single- or double-throw, or double-pole, single throw. It is a 30-amp. switch. A Telechron motor regulates the unit and two adjustable riders give two operations every 24 hours; additional riders may be installed. The switches used are of the mercury-to-mercury type.

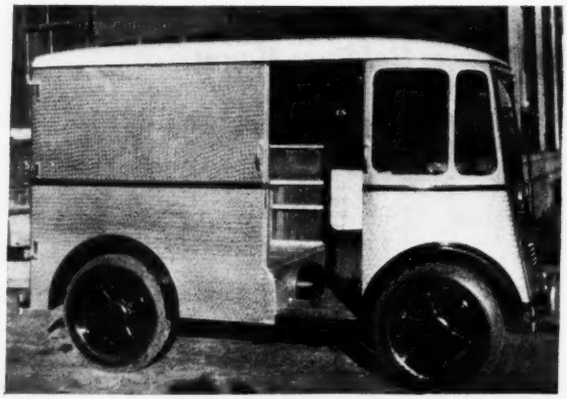
Disintegrates Raw Or Waste Materials

Exact control in fineness of products and ability to handle materials of great viscosity are guaranteed claims for a disintegrator built in sizes from 8 in. (inside diameter) upward by Enterprise Engineering Co., 2949 18th St., San Francisco. The principle involves a helical series of steel bars rotating within a cylindrical screen and, if desired, a non-clog sewage impeller on the same shaft pumps the output without need for an additional pumping unit. Materials handled include tomatoes, onions, green peppers, grape products, grain for brewers, fish offal (for oil extraction) and peach pits. The last named are reduced at the rate of 500 lb. per minute to a fineness that legally can be pumped into sewers, thus settling the cannery-waste-disposal problem. The illustration shows an 18-in. unit (15-hp. motor) equipped with both hopper feed and 9-in. screw-conveyor feed. A laboratory size driven by a 1-hp. motor with clearances adjustable between 0.01 and 0.5 in. is being introduced.



Four-Way Flex Chain

Almost unlimited flexibility in conveyor installations is made possible by the use of the Four-Way Flex chain developed by Standard Conveyor Co., North St. Paul, Minn. This chain will bend to a small diameter in any of four directions. The links consist of double-U sections held together by double-T lugs. The crossbars of the lugs are at right angles to permit flexing in two planes. These connecting lugs fit into machined surfaces. Links can be removed without tools. The ends of the links are rounded and overlapped so that a continuous flush surface results, allowing packages to be stopped without a bumping effect. Conveyors equipped with Four-Way Flex chains are said to be particularly adapted to use in creameries and breweries.



Brockway Announces Electric Trucks

Electric trucks in a range of models designed to fit all practical electric-truck operations are announced by Brockway Motor Co., Inc., 245 West 55th St., New York, N. Y. The Series 50-E truck has a drop frame and a side-entrance body adapting it to frequent-stop delivery service. It carries loads ranging from 500 to 3,000 lb. Battery equipment varies from 150 to 238 amp. hour capacities with current consumption averaging from 3½ to 6½ amp. hours per mile. The Series 100-E vehicles, with a capacity of from 2 to 3 tons, consume from 7 to 10 amp. hours per mile. Their battery equipment varies from 270 to 375 amp. hours capacity. The third model, the 170-E, is a heavy-duty unit designed for loads ranging from 3 to 6 tons. This truck has a current consumption of 11 to 15 amp. hours per mile. Its battery capacity varies from 330 to 525 amp. hours. The practical mileage for these electric trucks ranges between 30 and 40 miles per day.

Self-Sealing Caps

Self-sealing caps and bands for all types of bottles and jars are announced by Sylvania Industrial Corp., 122 East 42d St., New York, N. Y. Known as "Sylphseal," the viscose caps and bands are made in a wide range of sizes and colors, including two patented items: high gloss enamel and silky luster. Being applied wet, these caps and bands quickly dry and shrink to fit the container, thereby effecting an airtight seal. As a further protection against counterfeit packages, the bands or caps may be specially printed with a trade name or trademark.

Corkboard Cement

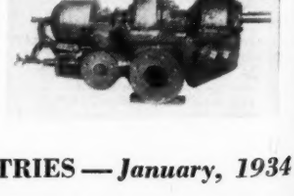
Corkboard insulation may be applied to concrete and brick walls and ceilings of cold-storage rooms with the aid of Enamelite, a product introduced by Presstite Engineering Co., 4067 Park Ave., St. Louis, Mo. This product is very adhesive and has high waterproofing quality, according to the manufacturer. It does not depend upon evaporation for drying or setting, but sets up like cement mortar. It can be applied to a cold room without putting the room out of service, it is said, no heat being required in working it. Enamelite can be used also as a finish or plaster coat. The product consists of powdered mineral asphalt blended with asbestos fiber and a fine mineral, and a liquid asphaltic flux. These are shipped in separate containers. One pound will cover 2 sq. ft. at a thickness of 1/16 in.

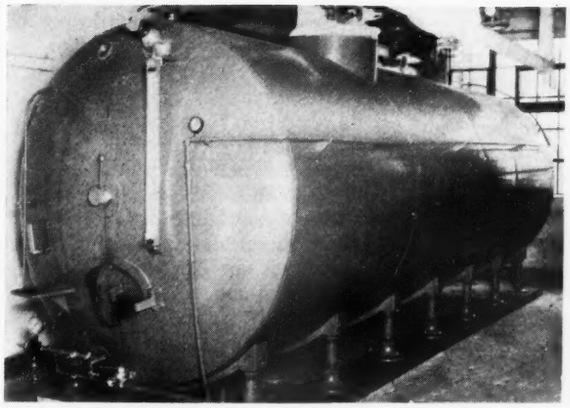
Collapsible Box

A folding box that collapses easily is announced by Folding Crate & Box Co., 512 Hodgson Bldg., Minneapolis, Minn. The ends are hinged at their top corners, and a stop on the bottom side of the box keeps them from swinging outward. To collapse the box, one merely swings the ends inward and up to bring them flush with the top edges of the sides, where they stop automatically. Then the box folds down in either direction. The container is built of basswood, reinforced with cross cleats and with metal corner braces. The corner braces and hinges are of rustproof metal. The standard box, which measures 19¾x12¾x10½ in., weighs only 6 lb. When set up the capacity is 1½ cu.ft.

Low-Speed Turbine Drive

Where exhaust steam can be used for heating purposes, such as in milk drying machines, the turbine-gear set announced by General Electric Co., Schenectady, N. Y., is particularly adaptable. Designed to drive centrifugal pumps, fans and other relatively low-speed equipment, the set consists of a steam turbine and a speed reducing gear, the latter permitting the turbine to operate at relatively high and efficient speeds. The housings of the turbine and gear are bolted together, being supported on the base of the turbine. The sets are self-lubricated, requiring but little attention. The turbine can be arranged to operate at steam pressures up to 400 lb., temperatures up to 750 deg. F. and back pressures up to 40 lb. gage. The speed of the drive shaft may be within the range of 180 to 3,000 r.p.m. The capacity ranges from 10 to 150 hp.





Processing Tank For Wine

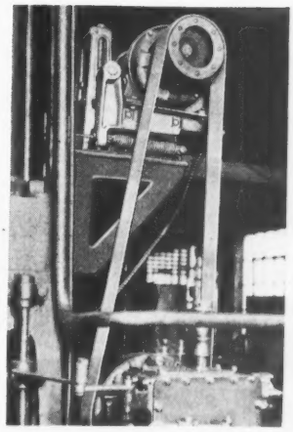
Champagne can be processed in 72 hours in a tank manufactured by Cream City Boiler Co., 1603 South 43d St., Milwaukee, Wis., the company states. This tank is a carbonating and cooling unit, having a capacity of 6,000 gal. It is equipped with a refrigerating unit, two direct-expansion ammonia cylinders immersed in the product being capable of reducing the temperature from 80 to 32 deg. F. in 20 hours. An automatic back-pressure control valve regulates the temperature to avoid frosting of the champagne. The tank operates at a pressure of 50 lb. per square inch, the carbonating equipment consisting of a supply line and four unglazed porcelain gas diffusers. An agitator entirely of 18-8 alloy metal, with integral speed reducer, is mounted directly on the rear of the tank. The tank is of double-shell construction, the inner tank being coated with a preparation that prevents off-flavor. Cork insulation covered with waterproof mastic surrounds the inner shell and is covered with an all-welded steel sheathing.

Steel Containers

The first of a line of steel containers for food products, the stainless steel beer barrel, announced by Firestone Tire & Rubber Co., Akron, Ohio, is of double-wall construction. The outer wall is of heavy-gage carbon steel corrugated for strength, and the inner cell is of smooth stainless steel which requires no pitching. The Firestone line of steel containers is furnished in capacities from one gallon up in either stainless or carbon steel and with either double-wall insulated construction or of the single-wall design.

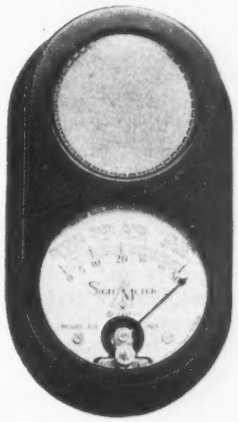
Motor Base For Vertical Drive

Correct tension in vertical belts can be maintained automatically. This is accomplished by the vertical drive base announced by Rockwood Manufacturing Co., 1801 English Ave., Indianapolis, Ind. The force producing the belt tension is derived from coiled springs. When the motor is located above the driven pulley, the springs are adjusted to support the entire motor weight, plus the necessary belt tension. With the motor below the driven pulley, the springs are regulated to support only that portion of the motor's weight not needed to provide belt tension. Two nuts at the ends of the spring rods regulate the spring tension. Adjusting screws take care of vertical belt stretch, these also being convenient in aligning the pulley. The Rockwood company is also manufacturing a new ceiling drive base which utilizes the weight of the motor to maintain belt tension.



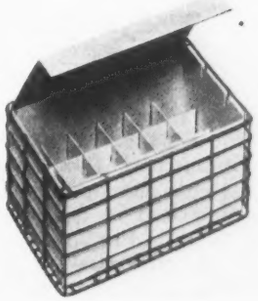
Sight Meter

Artificial lighting installations may be checked for adequacy with the "sight meter" developed by Sight Light Corp., Meriden, Conn. An adaptation of the Weston photronic (batteryless) photo-electric cell, the instrument indicates in foot-candles the intensity of the light falling upon a given spot. The scale also indicates whether the intensity of the light is sufficient for various types of work.



Wire Beer Cases

Beer cases fabricated from steel wire are announced by Pittsburgh Steel Co., Pittsburgh, Pa. The wire is of heavy-gage, copper-bearing steel and is welded at each intersection. The weight of the case illustrated, without the fiberboard liners and dividers, is 5¼ lb.; about ¼ to ⅜ lb. is added by the fiberboard. Other advantages attributed to the case include small space requirements and suitability for home delivery. The case is available with a wire lid, with integral wire dividers, with removable fiberboard semi-liners and dividers and in combinations of these types.



Cartridges Inclose Meter Units

Any element may be removed from the meter assembly announced by Republic Flow Meters Co., Chicago, Ill., without disturbing the other units. This has been made possible by mounting the actuating unit inside a metal cartridge which is interchangeable and which may be removed from the back of the instrument panel. In an assembly including an indicator, recorder and integrator, each instrument has its actuating mechanism in a separate cartridge-sealed element. The Republic meter panel is of a modernistic design, having a black finish and aluminum trim. The cartridge design has been extended to the entire line of Republic reading instruments. The company also has introduced a new boiler-horsepower indicator, the CS-24, which has a 24-in. porcelain enamel dial, enabling it to be read from a distance.

The Manufacturers ••Offer••

Liquid Handling—Bottle fillers, mixers, pumps and tanks. Ertel Engineering Corp., 108 East 16th St., New York, N. Y. Leaflet; illustrated.

Heating Systems—Equipment for transferring and controlling heat. Sarco, Inc., 183 Madison Ave., New York, N. Y. Booklet, 44 pages; well printed and illustrated.

Tablet Machinery — Mixers, dryers, molds and other equipment. F. J. Stokes Machine Co., Tabor Road, Philadelphia, Pa. Catalog 33-T, 44 pages; profusely illustrated.

Mills—Crushers, grinders and pulverizers. Robinson Manufacturing Co., Muncy, Pa. Bulletin No. 36-C, 24 pages; profusely illustrated.

Conveyors — Various general types. Standard Conveyor Co., North St. Paul, Minn. Booklet; exceptionally well illustrated; paper bound.

No-Ox-Id—A rust preventive. Dearborn Chemical Co., Chicago, Ill. Booklet, 24 pages; well illustrated.

Filtration—Filter presses and diaphragm pumps. T. Shriver & Co., Harrison, N. J. Booklet, 48 pages; profusely illustrated; paper bound.

Packaging—A "contact" publication. Pneumatic Scale Corp., Ltd., Quincy, Mass. Illustrated leaflet.

Costs — Packaging prices. Stokes & Smith Co., Philadelphia, Pa. Illustrated leaflet.

Cookers—Internal pressure or open cooking, vertical type. French Oil Mill Machinery Co., Piqua, Ohio. Booklet, 8 pages; illustrated.

Separators—Power or factory-size, "World Standard" type. De Laval Separator Co., 165 Broadway, New York, N. Y. Booklet, 19 pages; illustrated.

Motor Pumps—The Cameron, for general service. Ingersoll-Rand, 11 Broadway, New York, N. Y. Booklet, 15 pages; illustrated.

Switches—Diamond H, for remote control. Hart Manufacturing Co., Hartford, Conn. Bulletin No. 10-A, 32 pages; illustrated, including line drawings.

Washers—The Multisoak, for milk bottles. Cherry-Burrell Corp., Chicago, Ill. Bulletin No. G-216, 15 pages; illustrated.

Charting Courses—A publication outlining the services of Recording and Statistical Corp., New York, N. Y. Book, 94 pages; carefully printed and illustrated; bound in paper board.

Copper Tubes — Seamless elbows and return type fittings. Tube-Turns, Inc., 1300 South Shelby St., Louisville, Ky. Bulletin No. 51-1, 7 pages.

WHAT'S ON YOUR MIND?

The Coffee Pot Boils Over

To the Editor of FOOD INDUSTRIES:

We have read with unusual interest the article by P. W. Punnett in your October issue on the subject of coffee brewing.

Mr. Punnett's observation regarding the designing of pots is far from being correct, not only in our case but in the case of most manufacturers today, because they would not remain in business very long if the "guess and by gosh" attitude existed. We have, as many other manufacturers have, an up-to-date test kitchen, which is under the personal supervision of Mary Irene Hart, a nationally known home economics expert. Every utensil we make is tested and tried from every conceivable angle, and coffee makers especially are being tested almost every day, using coarse grind, fine grind, high priced coffee, low priced coffee, vacuum pack coffee; in fact, without a knowledge of the trends in the coffee business we could not begin to design the proper coffee-making devices. We have many large coffee roasters on our customer list who are also consulted regarding new proposed designs to avoid any possibility of errors.

Mr. Punnett's article appears even more ridiculous when he states that, to the best of his knowledge, "no attempts have been made by any pot manufacturer to apply the 'standard cup' method of coffee strength determination to the testing of coffee-pot performance, as was described in the second article of this series." First of all, there is no standard coffee cup size among manufacturers of cups and no uniformly accepted strength for coffee, one person desiring a weak cup of coffee and another a much stronger one.

If Mr. Punnett is interested in getting some first-hand information regarding coffee-making devices, we shall certainly be glad to hear from him.

G. C. KUBITZ,
Advertising Manager, Aluminum Goods Manufacturing Co.,
Manitowoc, Wis.

—◆—

To the Editor of FOOD INDUSTRIES:

I have read a copy of the letter of criticism which you received from G. C. Kubitz, of Aluminum Goods Manufacturing Co., of Manitowoc, Wis. If you publish Mr. Kubitz's letter, I trust you will also include this reply.

In the first place, may I suggest that Mr. Kubitz is entitled to speak with authority only concerning the methods used by the Aluminum Goods Manufacturing Co. Granting the fact that they have a test kitchen presided over by a home economics-trained worker, his own letter proves that they have no conception of accurate test methods as applied to coffee pots. Possibly the Miss Hart he mentions is quite expert in mixing up a cake or broiling a steak. But his description of her procedure in determining a coffee-pot performance indicates that she has missed the point completely. For it must be obvious that individual preferences as to coffee strength and quality of flavor have no place in a careful and scientific determination of pot efficiency. It doesn't matter whether one person likes a weak beverage and a second a stronger one, or one a light, acidy flavor and another a heavy, full body in the cup. If the method is properly planned to give accurate results which can be recorded in figures, it must be independent of the individual who is using it. It probably would be better if Mr. Kubitz turned over the coffee-pot testing job to someone trained in the use of scientific methods—possibly one of the engineers employed by his company.

Mr. Kubitz's remark concerning how "ridiculous" my article is in stating that, to the best of my knowledge, "no attempts have been made by any pot manufacturer to apply the 'standard cup method' of coffee strength determination to the testing of coffee-pot performance, as was described in the second article of this series," seems to be something of a boomerang, as his next sentence proves that he simply does not know what I was talking about. In the same article from which Mr. Kubitz quotes—the third in the series—and in the next sentence, a reference is given to the original description of the "standard cup method," in FOOD INDUSTRIES, September, 1930. Furthermore, in the second article mentioned in the quotation, the "method" was briefly described. Mr. Kubitz apparently has read none of these previous publications, for he seems to think I am referring to the size of coffee cups used in our homes or possibly to individual preferences in flavor strength. Mr. Kubitz apparently "leaped before he looked."

I do not think that Mr. Kubitz or Miss Hart can add much to my information on coffee-making devices. I have been engaged in scientific coffee research for over six years and have had experience with over a hundred devices made by perhaps 40 or 50 different manufacturers. This list would include the "Doctor Newton Coffee Maker," which used to be made by the Aluminum Goods Manufacturing Co. and which was a very poor specimen.

My experiences with coffee pots and also with a great many other household devices confirms my remark regarding the prevalence of the use of the "guess and by gosh" method in their design. Certainly if a device is unsafe to use, if its operation is inefficient, if the product obtained is mediocre, if the device is poorly constructed so that it has a short life, or if it cannot be kept clean, one would not say that much science had gone into its design. And manufacturers do turn out such products and still remain in business. Possibly this is due to high-pressure sales methods and low resistance on the part of gullible customers.

If, however, Mr. Kubitz still believes the methods used by his organization in testing coffee pots are superior to the methods described in the three articles of the series referred to previously, I shall be glad to have a complete description of them. And if they are superior I will cheerfully acknowledge that fact.

P. W. PUNNETT,
Columbia University,
New York, N. Y.

Wins Common Freight Rate For Canned Foods

One common freight rate on all carload canned-food shipments to and between points in Arkansas, Louisiana, Oklahoma and Texas has been established. The new rate, which was won by the Chicago Association of Commerce after six years of argument with the Interstate Commerce Commission, is a precedent for rate adjustments in practically all other territories. Moreover, it sets the pace for establishment of uniform rates on canned food products in carload quantities throughout the United States.

With the new rates, shippers will be able to mix the various articles of canned food in carload quantities.

Lead Tolerance Increased

For the 1934 season, the tolerance for lead that may be present as spray residue on fruits has been raised to 0.019 grain per pound. In June, the lead tolerance had been forecast at 0.014, but it was found that the fruit would not meet that tolerance, even with the most effective washing methods.

As a result of research now under way, the Department of Agriculture hopes by the end of the 1934 season to develop a method which will enable the industry to meet the 0.014 tolerance. And, perhaps, to eliminate lead entirely, as is now being done with vegetables.

The tolerance for arsenious oxide will remain at 0.01 grain per pound, as will that for fluorine.

Turkish Figs Have Gone Modern

(Concluded from page 11)

such as bacteria, molds and yeasts. These microorganisms are carried into the fig on the bodies of insects before and during its ripening period. There they find conditions ideal for their development. These same insects also often lay their eggs within the fig, and, after hatching, usually leave the fruit about the time it is taken from the drying trays. Fumigation, as now practiced, will eliminate much of this souring by destroying the insects, thus preventing their returning to the orchard. A vast amount of work has also been done in eliminating other breeding places of the insects, such as promptly picking up all decaying fruit and vegetables in and around the orchards, burning matted bunches of vegetation, and cleaning up in general.

Endosepsis is a fungus disease natural to the caprifig, wherein, due to the caprifig tree's perpetual bearing, it is able to continue indefinitely. Because of climatic conditions or some other phenomenon, however, it has never developed the significance in Turkish figs which its character would indicate. It causes a disorganization of the fig's interior, not materially unlike souring during its active period, but eventually produces a dry, insipid, pulpless fruit. The fungus spores are carried to the edible figs on the body of the insect blastophaga, which breeds only in the caprifigs and is necessary for the fertilization of all Smyrna type figs.

Turkey Establishes Laboratory

While endosepsis, like souring, unquestionably exacts its toll, only a very small percentage reaches the American market in Turkish figs. Its effect is so evident in the dried fruit that it may be easily sorted out when the figs are being processed. In addition, the Turkish Government has now installed a biological laboratory near Smyrna, the chief function of which is to improve further the general quality of figs; and, as endosepsis is about the only important problem not under way at present, it will undoubtedly be considered soon.

The last five years have been for the Turkish fig grower a triumphant ascent through the clouds of a neglected past. Where but a few years back half a million fig trees dropped their ancient boughs and bore in silence unearned abuse, where brigands slunk beneath the shadows of these helpless plants at night and civilians lived and moved in constant fear by day, today the sun smiles its blessings upon the upturned leaves of clean and healthy trees, and men walk about like men as their happy futures unfold before them. Those once humble, benighted beings, plowing their withering groves and harvesting their dwindling crops in dismal silence, now spring to their work with a song on their lips and certain in their belief that they are doing their little bit in the general scheme of things. Clean, new, modern depots (collecting centers) mark the spots where once the insects and animals swarmed over piles of figs at will.

Down in Smyrna (their last stand on Turkish soil) even greater changes have come. Here the figs are fumigated again before they enter the packing house, are spread out on clean elevated tables where clean men and women in white uniforms carefully sort them one by one, then pack them in cotton-lined bags for export.

One will now search in vain the whole season through to find a live worm in most of the Smyrna packing houses. Floors are scrubbed many times a day, walls are painted white, and the workmen are under constant surveillance for cleanliness. Both American and Turkish inspectors mingle constantly with the crowds of contented workmen and modern machinery adds its song on every side. The greatest care is exercised to keep the sorting tables clean, to use only clean, perfect packing containers, and finally to secure clean holds in the ships that carry figs away.

Solid CO_2 as a Refrigerant For Ocean Shipments

EXPERIMENTS now under way on the S.S. "Missourian," of the American-Hawaiian line, are intended to develop the feasibility and economy of using solid carbon dioxide as a refrigerant for foodstuffs in transit by water. The objectives are: (1) space economy by doing away with the usual refrigerating machinery and also eliminating (2) the attendance and (3) the risk of derangement involved in a mechanical installation. (4) There also is possibility that the overflow CO_2 gas may be used in the holds to prevent spontaneous combustion.

A 50-cu. ton compartment is being used for the experiment, inclosed by hollow walls, the space between the walls being filled with kapok. Into this space is admitted CO_2 gas which is sublimated as needed (under carefully regulated control) from two 800-lb. solid CO_2 bunkers within the compartment. Where the kapok is impregnated with CO_2 gas in the proportions used in this experiment its thermal conductivity was found to be 0.018, as against 0.25 for very low density corkboard, thus giving a very great advantage in using CO_2 as an insulant as well as a refrigerant. Temperature, humidity and ionization of the air are automatically controlled, and electric fans insure air circulation.

The experiment is being carried on in two stages. The first, or feasibility, stage has been completed, and the present studies deal with economy—*e.g.*, thickness of wall insulation is being decreased to determine how much saving may be made safely in this way.

The first shipment consisted of fresh eggs from San Francisco to Philadelphia, via New York, and with the accurate control of air conditioning that was maintained these eggs were delivered after a 28-day water voyage in what was reported to be perfect condition with the negligible weight loss of 2 oz. per 30-dozen case. The return shipment of chocolate candy permitted experiment with higher temperatures (eggs were kept at average temperature of 36.44 deg. F.; chocolates at 50 deg. F.) and gave like results.

Particular emphasis is attached to the results of controlled ionization, which prevents growth of molds or fungi or contamination by absorption of odors. This last-named advantage makes it possible to ship in the same compartment foodstuffs that otherwise certainly could not be combined without odor absorption.

When Does Warehousing Pay?

(Concluded from page 19)

of goods must be sold before the mounting storage and interest charges consume the saving in freight rate on quantity shipments. That is, there is a definite "break-even" point in warehousing. If a carload of goods cannot be disposed of before this point is reached, the carrying of a warehouse stock is uneconomical.

Where the "break-even" point lies may be determined quite simply, both graphically and mathematically. The graphic analysis is shown in Fig. 3, from which the following rules are obvious:

1. When the sum of warehouse handling charges, warehouse storage charges, and interest on investment accumulates to a total equal to the differential between the l.c.l. and carload freight rates the "break-even" warehousing point has been reached and the warehousing period is at its maximum.
2. When the sales volume in the warehouse territory within the maximum warehousing period is less than the minimum weight on which a carload freight rate may be obtained, there is a monetary loss if goods are warehoused, and conversely.

For those mathematically inclined a simple formula may be derived from Fig. 3. The meaning of the symbols is given in Table I. From the figure:

$$c + h + tw + ti = f$$

Or

$$t = \frac{f - c - h}{w + i}$$

Now, in order to secure advantage of the carload rate a minimum carload of goods must be sold out of the warehouse within period t. To do this, the sales volume per month must at least be such that:

$$st = m$$

Substituting for t the value just derived above, it may be seen that no warehouse stock is justified when:

$$\frac{s(f - c - h)}{w + i} < m$$

Table I—Explanation of Symbols

c = Carload freight rate per hundredweight from plant to warehouse.
h = Warehouse handling charge per hundredweight—a fixed charge independent of length of time in storage.
i = Interest on investment per hundredweight per month (value per hundredweight of goods multiplied by interest rate per month paid for short-term funds).
f = Less-than-carload freight rate per hundredweight from plant to warehouse.
m = Minimum weight (in pounds) of goods for which carload freight rate applies.
s = Sales volume per month (in pounds) of goods within the warehouse territory.
t = "Break-even" warehousing period in months (the maximum number of months goods may be warehoused before the fixed charges accumulate sufficiently to absorb the freight differential $f - c$).
w = Warehouse storage charge per hundredweight per month.

As is all too often the case when an attempt is made to apply mathematics to business problems, the point now is reached where it is necessary to consider intangible factors which influence the results materially but which are not susceptible of exact mathematical evaluation. If the commodity being warehoused is perishable, the permissible warehousing time may in reality be much less than that theoretically determined. If customers demand immediate deliveries it may be necessary to ship from a near-by warehouse even though a direct shipment from the plant would be more economical. Or, to reverse the situation, customers may prefer direct shipments from the plant, when shipments via a warehouse would be cheaper.

It might seem that the intangible factors, on which no definite value can be placed, would upset the methods of analysis outlined above. The intangible must be given their due consideration, it is true, but they merit no more weight in arriving at a conclusion than any of the more easily appraised factors, such as freight rates. Where none of the factors has been analyzed, any conclusions as to warehouse territories or location are simon-pure guesswork, and nothing more. But where all of the measurable factors first have been analyzed in some commonsense manner, the unreliable personal element of judgment is restricted to the few factors which cannot be appraised exactly. The final conclusion arrived at will be infinitely more accurate. That is why a simple warehouse territory and location analysis returns large dividends in the form of lowered freight bills.

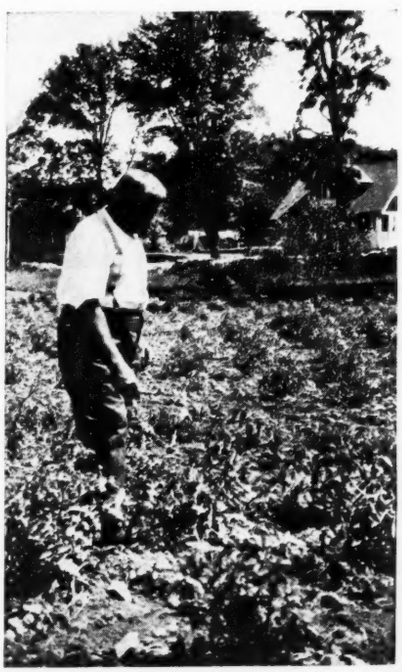
What Governs the Price of Raw Material?

(Concluded from page 9)

contracted for many months before they are harvested, may change very materially is a speculative feature which is not altogether satisfactory to the canner who must contract in advance for the crop if he wants the product. But there does not seem to be any other way for him to do and be sure of getting the special material wanted. The canner is interested solely in the particular crop, whereas the grower is interested in growing such a crop only if he is fairly well assured that the returns from it will equal if not exceed the returns from some other more general and more assured crop.

It appears, then, that there is a very definite reason why prices for contracted green produce, such as the canner uses, will always be more stable and less subject to fluctuation than the prices for the other type of farm produce. The canner always has had to, and probably always will have to, pay the grower somewhat more attractive prices for the kind of green produce needed than the grower might reasonably expect to realize from any other general crop.

And, after all, isn't it better so? Violent fluctuation in the prices of our canned goods is not desirable, and anything that will tend to bring about a reasonable degree of stabilization in the prices of all canned foods that must necessarily be planned for at least a year in advance of their sale to the consumer, should be welcomed by the canning industry.



This grower is ruefully contemplating his first venture in contract production. The tomatoes were not setting, although the vines were hearty and well leafed.